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The EDISON ELECTRIC INSTITUTE BULLETIN

March
1955

EEI Convention Preparations

Accounting Conference Program

Don't Sell Load Growth Short

George E. Whitwell

Power Equipment to Get Atomic Test

Electrical Modernization in NYC

J. O. Covington

Published Monthly by Edison Electric Institute

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

December, 1953-1954

SOURCE AND DISPOSAL OF ENERGY—MONTH OF DECEMBER

	1954	1953	%
NET GENERATION* (Kwhrs in Thousands)			
By Fuel Burning Plants	34,378,738	30,404,151	+13.1
By Water Power Plants	9,048,009	8,679,081	+ 4.3
Total Generation	**43,426,747**	**39,083,232**	**+11.1**
Add—Net Imports Over International Boundaries	280,130	67,583	.....
Less—Company Use	124,311	131,064	− 5.2
Less—Energy Used by Producer	685,254	695,955	− 1.5
Net Energy for Distribution	**42,897,312**	**38,323,796**	**+11.9**
Lost and Unaccounted for	5,804,794	5,284,117	+ 9.9
Sales to Ultimate Customers	**37,092,518**	**33,039,679**	**+12.3**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of December 31			
Residential or Domestic	43,139,998	41,981,633	+ 2.8
Rural (Distinct Rural Rates)	1,637,535	1,621,810	+ 1.0
Commercial or Industrial:			
Small Light and Power	5,992,814	5,863,210	+ 2.2
Large Light and Power	279,591	271,947	+ 2.8
Other Customers	164,621	160,465	+ 2.6
Total Ultimate Customers	**51,214,559**	**49,899,065**	**+ 2.6**
KILOWATTHOUR SALES—During Month of December (Kwhrs in Thousands)			
Residential or Domestic	10,202,550	9,109,684	+12.0
Rural (Distinct Rural Rates)	637,450	583,410	+ 9.3
Commercial or Industrial:			
Small Light and Power	6,397,404	5,921,432	+ 8.0
Large Light and Power	18,131,269	15,764,525	+15.0
Street and Highway Lighting	416,669	394,401	+ 5.6
Other Public Authorities	820,132	778,426	+ 5.4
Railways and Railroads:			
Street and Interurban Railways	247,233	255,600	− 3.3
Electrified Railroads	193,262	189,001	+ 2.3
Interdepartmental	46,549	43,200	+ 7.8
Total to Ultimate Customers	**37,092,518**	**33,039,679**	**+12.3**
Revenue from Ultimate Customers (Thousands)	**$644,528**	**$589,705**	**+ 9.3**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended December 31, 1954			
Kilowatthours per Customer	2,549	2,346	+ 8.7
Average Annual Bill	$68.37	$64.28	+ 6.7
Revenue per Kilowatthour	2.69¢	2.74¢	− 1.8

* By Courtesy of the Federal Power Commission.

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The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

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The EDISON ELECTRIC INSTITUTE BULLETIN

March, 1955

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CONVENTIONS AND MEETINGS

1955

MARCH

16-17 **EEI Insurance Committee, Jung Hotel, New Orleans, La.**
16 **EEI Industrial Relations Committee, Sheraton Park Hotel, Washington, D. C.**
18 PIP Mid Atlantic Regional Meeting, Jefferson Hotel, Richmond, Va.
18-20 **ASME Spring Meeting, Lord Baltimore Hotel, Baltimore, Md.**
21-23 **Southeastern Electric Exchange, Annual Meeting, Boca Raton Hotel and Club, Boca Raton, Fla.**
23-24 ASME 3rd Annual Engineering Management Conference, Hotel Statler, Cleveland, Ohio.
23-25 **Missouri Valley Electric Association, Engineering Conference, President Hotel, Kansas City, Mo.**
24 357th Meeting, National Industrial Conference Board, The Shamrock Hotel, Houston, Texas.
24-25 **Oklahoma Utilities Association Convention, Mayo Hotel, Tulsa, Okla.**
28-31 21st Annual EEI Sales Conference, Edgewater Beach Hotel, Chicago, Ill.
30-Apr. 1—American Power Conference, Chicago, Ill.

APRIL

6- 7 **15th Annual Young Men's Utility Conference, Ipalco Hall, Indianapolis, Ind.**
7- 8 **Pacific Coast Electrical Association Joint Conference, Administrative Services and Accounting Section, PCGA, Jokake Inn, Phoenix, Ariz.**
7- 8 **Southeastern Electric Exchange Engineering and Operating Section, Roosevelt Hotel, New Orleans, La.**
12-15 14th Joint AGA-EEI Conference on Operation of Public Utility Motor Vehicles (in conjunction with AGA Distribution, Motor Vehicles and Corrosion Conf.) Netherlands Plaza Hotel, Cincinnati, Ohio.
13-15 AIEE Southern District Meeting, Soreno Hotel, St. Petersburg, Fla.
13-15 **Northwest Electric Light and Power Association, Engineering and Operation Section, Davenport Hotel, Spokane, Wash.**
18-21 **ASME Spring Meeting, Lord Baltimore Hotel, Baltimore, Md.**
20 ECAP Management Group, Hotel Pierre, New York, N. Y.
21 **EEI Industrial Relations Committee, EEI Headquarters, New York, N. Y.**
24-26 Rocky Mountain Electrical League Spring Conference, Shirley Savoy Hotel, Denver, Colo.
25-26 EEI Hydraulic Power Committee, Atlanta Biltmore Hotel, Atlanta, Ga.
25-27 EEI-AGA 1955 National Conference of Electric and Gas Utility Accountants, Conrad Hilton Hotel, Chicago, Ill.
25-27 **EEI Meter and Service Committee, Washington-Duke Hotel, Durham, N. C.**
25-28 **North Central Electric Association, Engineering Committee, Dyckman Hotel, Minneapolis, Minn.**
25-30 National Industrial Conference Board Atomic Energy Course for Management New York, N. Y.
28-29 10th Anniversary SAM-ASME Time Study and Methods Conference, Hotel Statler, New York, N. Y.

1955

MAY

3- 4 **EEI Transmission and Distribution Committee Meeting, Statler Hotel, Detroit, Mich.**
4- 6 AIEE Middle Eastern District Meeting, Deshler Hilton Hotel, Columbus, Ohio.
5 NAEC Annual Meeting, Mayflower Hotel, Washington, D. C.
5- 6 Wisconsin Utilities Association Home Service Conference, Edgewater Hotel, Madison, Wis.
5- 7 PEA Hydraulic Power Committee, Hotel Sheraton-Brock, Niagara Falls, Ontario.
8-11 **EEI Purchasing and Stores Annual Spring Meeting, Dinkler-Tutwiler Hotel, Birmingham, Ala.**
9-10 **EEI Prime Movers Committee, Biltmore Hotel, Los Angeles, Calif.**
9-10 **EEI Accident Prevention Committee, Pfister Hotel, Milwaukee, Wis.**
9-11 Northwest Electric Light and Power Association, Business Development Section, Hotel Utah, Salt Lake City, Utah.
10 ECAP Copy Group, Hotel Sheraton, Chicago, Ill.
10 EEI Commercial Electric Cooking Conference, Sheraton Hotel, Chicago, Ill.
11-13 Pacific Coast Electrical Association Annual Convention, Palace Hotel, San Francisco, Calif.
12-13 PEA Systems Operation Committee. Skytop Lodge, Skytop, Pa.
16-17 EEI Electrical Equipment Committee, Rice Hotel, Houston, Texas.
19-20 **EEI Industrial Relations Committee jointly with Personnel Administrative Section, Southeastern Electric Exchange, Netherlands Plaza, Cincinnati, Ohio.**
19-20 EEI Dealer Coordination Workshop, Webster Hall Hotel, Pittsburgh, Pa.
19-20 PEA Electrical Equipment Committee Meeting, Hotel Roosevelt, Pittsburgh, Pa.
22-25 National Association of Electrical Distributors 47th Annual Convention, The Conrad Hilton Hotel, Chicago, Ill.
23-24 PEA Annual Accounting Conference, William Penn Hotel, Pittsburgh, Pa.
26-27 PEA Relay Committee Spring Meeting, Abraham Lincoln Hotel, Reading, Pa.
27-28 **North Central Electrical Association, Accounting Committee, Fergus Falls, Minn.**

JUNE

5-10 ASME Oil and Gas Power Conference, Statler Hotel, Washington, D. C.
12 ECAP Management Group, Statler Hotel, Los Angeles, Calif.
13-16 **EEI ANNUAL CONVENTION, Los Angeles, Calif.**
22-24 **Northwest Electric Light & Power Association Accounting and Business Practice Section, Vancouver Hotel, Vancouver, B. C.**
26-28 **Wisconsin Utilities Association Accounting Section, Dell View Hotel, Lake Delton, Wis.**
26-29 **Michigan Electric Association Annual Convention, Grand Hotel, Mackinac Island, Mich.**
27-29 CEA Annual Convention, Hotel Vancouver, Vancouver, B. C.

AUGUST

11-12 Southeastern Electric Exchange, Personnel Administration Section, Roanoke Hotel, Roanoke, Va.
15-19 AIEE Pacific General Meeting, Butte, Mont.

Annual EEI Convention to Focus Attention on Industry's Problems and Prospects

WITH developments of recent months pointing clearly to growing responsibilities and opportunities for the electric industry, the Twenty-Third Annual Edison Electric Institute Convention, to be held in Los Angeles, California, June 13-16, will bring together electric company executives from all over the nation to hear an exceptional group of speakers discuss subjects which are not only highly important now, but of vital influence on the industry's future.

The presentations at the Convention's five general sessions will constitute an up-to-date and authoritative synthesis of the problems and prospects of principal concern to the industry, its companies, and their people.

Among the topics to be covered are developments in government atomic policy, utility atomic progress, regulation, the industry's foundation for public support, super-critical steam pressure generation, high voltage transmission, public relations, and load-building.

S. R. KNAPP
Chairman of the Convention Program Committee

"We are today in an era of even greater change—and greater opportunity—than in the past," Harold Quinton, EEI President, said recently in commenting on Convention plans. "Our program is being designed to provide solid information, stimulate our thinking, and indicate guideposts to the future for which we are now preparing."

These criteria have been ably met in the arrangements made by the five-man Convention Program Committee, composed of Chairman Sherman Knapp, President, The Connecticut Light and Power Co.; R. P. Briggs, Executive Vice President, Consumers Power Co.; P. B. McKee, President, Pacific Power & Light Co.; N. R. Sutherland, Vice President, Pacific Gas and Electric Co.; and F. M. Wilkes, President, Southwestern Gas and Electric Co.

The program will open with the first of the five general sessions on Monday afternoon, June 13. The second and third general sessions will take place on Tuesday morning and afternoon, June 14. Wednesday morning, June 15, is scheduled for the fourth general session; and the fifth general session,

R. P. BRIGGS

P. B. MCKEE

N. R. SUTHERLAND

F. M. WILKES

Members of the Convention Program Committee

on Thursday morning, June 16, will bring the Convention to a close.

All sessions will be held in the Philharmonic Auditorium across from Pershing Square in Los Angeles.

Registration

For the convenience of those planning to arrive on the weekend, registration facilities will be open in the lobbies of the Biltmore and Statler Hotels from 11 a.m. to 5 p.m. on Sunday, June 12. Registration will also be conducted at these two hotels on Monday, from 8 a.m. to 2 p.m.

Registration at the Philharmonic Auditorium will begin on Monday at 12 noon, and on Tuesday, Wednesday, and Thursday, at 8:30 a.m.

A registration fee of $15 will cover attendance at all business sessions and social functions and include members of the family accompanying the registrant. Convention badges for gentlemen and pins for the ladies will be required as identification for admission to business sessions and social functions. Badges and pins will be obtainable only upon registration.

While the business sessions will be the primary focus of the delegates' attention, a series of recreational interludes have been included in the program which offer rewarding opportunities for the renewal of acquaintanceships and for friendly interchange of views.

The first of these events will be the President's Reception on Monday evening, following the first general session, in the Pacific and Sierra Rooms of the Statler Hotel. Refreshments will be served and music will be provided for dancing.

On Tuesday evening, during the daylight hours, and on Wednesday afternoon, when no business session is scheduled, sightseeing bus tours will be conducted. Tickets for the tours will be on sale at the Convention information booths in the lobbies of the Biltmore and Statler Hotels. Also available at the information booths will be listings of various locations where attractions ranging from good food to light opera are offered.

Climaxing the Convention's social activity will be the Wednesday evening program to take place in the Paramount Theatre near Pershing Square. Following the presentation of the Charles A. Coffin Award at 8:30 p.m., special entertainment featuring music and comedy by Hollywood personalities and other talented performers will be offered through the courtesy of the General Electric Co.

For the ladies at the Convention, a program of two events on successive days has been worked out. For Tuesday afternoon, a bus tour of the Universal Studios motion picture lot outside of Hollywood has been arranged; and on Wednesday, the ladies will have the opportunity of taking a tour of Hollywood and Beverly Hills, which will include luncheon and a fashion show at the outdoor Copa Club of the Beverly Wilshire Hotel.

Preliminary attendance figures indicate that the Los Angeles Convention will attract a large number of delegates and guests. Because the Convention dates fall at the start of the regular summer tourist and vacation season, when demands on both transportation and hotel facilities are heavy, those going to Los Angeles are advised to complete their travel plans and make their hotel reservations at an early date.

Reservations

Application blanks for reservations at the four Convention hotels in Los Angeles are available on request from the Edison Electric Institute, 420 Lexington Avenue, New York 17, New York. Applications for reservations and inquiries concerning housing should be sent direct to Mr. P. A. Harrigan, Housing Bureau, Los Angeles Chamber of Commerce, 1151 South Broadway, Los Angeles 15, California.

Also available from the Institute are forms to assist in arranging for either air or train travel. Because of the wide range in modes of transportation, points of origin, and dates of departure and arrival, no special Convention trains or flights to or from Los Angeles are planned.

Three principal railroads — Santa Fe, Southern Pacific, and Union Pacific—and three transcontinental airlines—American, Trans World, and United — serve Los Angeles. Each transportation system will be pleased to provide detailed information on fares, stop-over privileges, side-trips, and routing possibilities to help Convention-goers in their vacation planning as well as in their travel requirements.

13 Companies Earn Safety Merit Awards

A TOTAL of 13 EEI Safety Merit Awards, each recognizing the accumulation of 1,000,000 man-hours worked without a disabling accident, were authorized for presentation in the period between January 1 and March 15. Award certificates were presented to the following companies:

Alabama Power Co.
Gorgas Steam Plants 1,000,999

The Cleveland Electric Illuminating Co.
Entire Company 1,000,000
Overhead Lines Department 1,000,000

Consolidated Edison Co. of New York, Inc.
Substation Operation—Substation Maintenance Bureau 1,000,000

Consolidated Gas Electric Light and Power Co. of Baltimore
Building Construction Department 1,105,366
Electric Operations 1,132,214

Delaware Power & Light Co.
Electric Department—Northern Division ..... 1,090,000.

Metropolitan Edison Co.
Entire Company 1,067,376

Monongahela Power Co.
Clarksburg Division 1,083,320

Mississippi Valley Public Service Co.
Entire Company 1,000,000

Southern California Edison Co.
Southern and Long Beach Substation Division 1,005,830

Southwestern Public Service Co.
Panhandle Division 1,000,000
Production Department 1,000,000

The award to Mississippi Valley Public Service Co. was earned by its less than 100 safety-minded employees, who worked from October 10, 1949, to January 19, 1955, without an accident. An award certificate in June, 1952, acknowledged 500,000 accident-free man-hours. The company continued for another 500,000 man-hours without mishap, bringing the total to 1,000,000, the man-hours recognized by the award in this period. The award to Monongahela Power Co.'s Clarksburg Division also recognized an impressive record—210 employees worked without accident for two and one-half years to reach the 1,000,000 man-hour mark. Southern California Edison's Substation Division's award was the fifth award made to one of the company's major divisions in slightly over a year. The award certificate to the Production Department of Southwestern Public Service Co. recognizes a two-year performance record.

In the heart of the business section of Los Angeles is Pershing Square which will become a familiar sight to Convention delegates. Convention sessions will be held at the Philharmonic Auditorium across from the park. Nearby are Convention hotels and the Paramount Theatre.

Los Angeles to Be Host to Twenty-Third EEI Convention

LOS Angeles, the site of the 1955 EEI Convention, is a city of superlatives, a sprawling giant of over 2 million population, whose phenomenal growth in recent years has pushed it right to the top among the great metropolitan centers of the nation and of the world.

The expedition under Gaspar de Portola which arrived at an Indian village called "Yang-na" on August 1, 1769, could scarcely have imagined the colossus that would rise there. But on August 2nd, the day of "Our Lady, Queen of the Angels," Father Juan Crespi took the first step on the way to the future by naming the place *Nuestra Señora la Reina de Los Angeles.*

Despite its peaceful name, the little town suffered violent political growing pains. Following Mexico's achievement of independence from Spain, in 1822, the village was the scene of frequent disturbances and revolts. In 1835, it was made a city by the Mexican Congress, and in 1845-47 was the actual capital of California.

When war broke out between Mexico and the United States, the bitterly divided city put up no effective resistance to the U. S. troops at first, and the American flag was raised over Los Angeles on August 13, 1846. However, the small garrison left to occupy the city was forced out by a rebellion of the inhabitants, and the Americans did not regain Los Angeles until January, 1847.

Los Angeles did not join the ranks of United States cities until 1850, the year of its incorporation and of California's entry into the Union. At that time, too, the first English school in the once-Mexican city was opened. But the city has more than made up for its comparatively late start in the century since.

It was not easy for the Angelenos in the early days. Their town site had been chosen with no reference to criteria used by city planners today. One of the factors in the location of the original town was the fresh water issuing from the foothills of the San Gabriel mountains to the north, but apparently little attention had been paid to the way in which deserts, oceans, and mountains isolated the settlement from the rest of the world. And, with less than 16 inches of annual rainfall, the growing city soon found itself with a shortage of fresh water.

In the face of these harsh realities, the people set to work. With vision, imagination, and boundless energy, stimulated by the refreshingly gentle climate, they eventually brought water through the world's longest aqueduct across 250 miles of desert; they carved one of the world's greatest harbors out of a mud flat 24 miles from the heart of the city; and they brought forth from the earth such riches of

Winding through palm-studded MacArthur Park in Los Angeles is the world famous Wilshire Boulevard. This scene illustrates the sharp contrast between the tropical beauty that characterizes Los Angeles and the growth of a busy metropolis.

oil, minerals, fruits, and vegetables that people from all parts of the nation were attracted to this amazing land.

With each advance in its development, Los Angeles' population grew. From a mere 70,000 in 1888, the total reached 1,970,358 in 1950; and by the beginning of 1954, there were over 2,100,000 inhabitants.

Tourist Attractions

Exerting a great attraction on tourists and permanent residents alike are the spectacular Los Angeles geography and a climate that promises sunshine and pleasant temperatures the year round.

Unlike other leading cities of comparable size, the West Coast metropolis offers a choice of living areas ranging from rustic mountain retreats, windswept bluffs, surf-washed beaches facing the Pacific, sage and sand resorts on near-by deserts to lush half-acre "ranchos," the typical city home, modest flat, or elegant apartment. There is a sense of space and spaciousness in Los Angeles living not often found elsewhere.

For visitors, Los Angeles abounds with things to do and places to go. Hollywood is, of course, a tourist "must," though in outward appearance it looks much the same as any other part of the city. Movie studios are scattered from Culver City through Hollywood proper to the San Fernando Valley, but the glitter and "make-believe" of the movie-making world permeate the film capital stores, restaurants, theaters, and even the appearance of the inhabitants.

Historic Interest

Of older historic interest are other picturesque areas in the city. Among these are Olvera Street, harking back to the early Mexican days, with curio shops and cafes; Old Mission Church; and Chinatown, where quaint shops and restaurants line Gin Ling Way.

In the heart of the city is La Brea Tar Pits, where the world's richest collection of prehistoric animal remains was found, and where these great beasts appear once more through sculpture and statuary as they did in life.

Los Angeles museums, libraries, and centers of higher education are of world renown. Among these institutions are the museum of history, science and art in Exposition Park; the Southwest museum, specializing in the civilizations of the southwestern U. S., Mexico, and Central America; Los Angeles Public Library; Henry E. Huntington library and art gallery; University of Southern California; and University of California at Los Angeles.

Nearby Resorts

Scholar and tourist alike turn for relaxation to the miles of white sand beaches along the Pacific at such resort towns as Malibu, Santa Monica, Ocean Park, Venice, Hermosa, Redondo, and Long Beach—all in the Los Angeles area. And just 25 miles offshore, easily reached by steamer, is Santa Catalina Island, which offers all forms of outdoor sport, deep-sea fishing, and glass-bottom-boat rides over the famous submarine gardens.

For those who prefer green scenery to sea-scapes, Los Angeles offers 130 parks totaling more than 5,000 acres. Griffith Park, more than 3,700 acres of natural foothill, includes a golf course, and is the site as well for the planetarium.

Industrial City

Los Angeles is realizing its tremendous vacationland potential and already has established a leading position as tourist mecca and movie capital. But the enterprising Angelenos have achieved industrial eminence as well. Leading the nation in the manufacture of aircraft and aircraft parts, pumps, and compressors, refrigeration equipment and canned seafood, the Los Angeles metropolitan area is second, nationally, in automobile tire and tube production and a host of other products including blown glass and jewelry.

Delegates and guests attending the EEI Convention in Los Angeles this year will find a cosmopolitan city, stimulating and exciting, of many aspects, many interests and of huge dimensions. As other great cities on this earth go, it is a young metropolis, but bursting with energy and driving confidently towards the supreme position among the leading centers of the world. There is reason to believe that Los Angeles may achieve this goal, if past accomplishments are any indication of the future.

Chicago Conference for EEI-AGA Accountants to Study Current-Day Problems

THE National Conference of Electric and Gas Utility Accountants, sponsored by the Accounting Division of the Edison Electric Institute and the Accounting Section of the American Gas Association, will meet at the Conrad Hilton Hotel in Chicago, Ill., on April 25, 26, 27, 1955. A program which promises to furnish the material and discussion for many of the current-day problems in the utility accounting field will be developed by various industry personnel and several national authorities.

General Session

With O. K. Boyd, Consolidated Gas Electric Light and Power Co. of Baltimore, Chairman of the EEI Accounting Division Executive Committee, and A. T. Gardner, Delaware Power & Light Co., Chairman of the AGA Accounting Section Managing Committee, presiding, a general session will take place on Monday afternoon, April 25, at 2 p.m. A welcome to the delegates will be extended by Willis Gale, Chairman of the Board, Commonwealth Edison Co., on behalf of the host company and by Harold Quinton, President of the Institute and of Southern California Edison Co., for EEI. Corresponding remarks of welcome will be extended by James F. Oates, Jr., Chairman, The Peoples Gas Light and Coke Co., and Dean H. Mitchell, President, Northern Indiana Public Service Co., for AGA.

Electronic Machines

The status and development of electronic machines for clerical and office uses will be presented to the general session group by Dr. Howard Aiken, Director of the Computation Laboratory at Harvard University. Dr. Aiken is well-known among industry accounting personnel in connection with research activities conducted in the field of electronic machines.

Discussing the important subject

O. K. Boyd
Chairman, EEI Accounting Division

of cost control through accounting will be A. Paul Thompson, Iowa Power and Light Co. As chairman of the EEI Cost Management Subcommittee, Mr. Thompson has developed important ideas and subject matter for presentation of this topic, which currently concerns member companies of the industries.

J. Gordon Ross, Rochester Gas and Electric Corp., will present the situation on the customer-employee relations film and manual project unveiled at last year's conference and currently being offered to member companies for their practical use.

Gene Flack, Sales Counsel and Director of Advertising, Sunshine Biscuits, Inc., will conclude the general session with the topic "Let's Look Alive in '55," a talk designed to cover the personal relations angle of everyday business activities.

General Activities Group

A combined session of the Depreciation Accounting, General Accounting, Internal Auditing, Plant Accounting and Property Records and Taxation Accounting Committees will be held on Tuesday morning, April 26. Included in the program for the group session are such subjects as the changes in internal auditing, penniless accounting; sickness and disability payments — another headache for controllers; matters to be considered prior to adoption of liberalized tax depreciation; and long-range forecasting.

Customer Activities Committees

On Tuesday, the customer activities committees will meet separately. The Customer Accounting Committees will make short presentations, followed by discussions, on such topics as meter reading and bill forms; cash posting methods and trends — mechanical vs manual; mark-sense meter reading; high-low consumption checks; account numbering systems; estimated meter reading practices and policies and "why do it?" The Committees will have a display board of the various bill forms of those companies contributing to the preparation of projects on bill forms and meter reading sheets.

The Customer Collections Committees on Tuesday will discuss such subjects as collection notices and form letters; expediting collections by estimating final bills; the impact of electronics on credit and collection operations; the question of whether or not there is a "no-collection" plan; and a discussion of the credit picture. At the Tuesday luncheon and afternoon session a panel will discuss some 50 credit and collections problems with audience participation.

The Customer Relations Committees will consider at their Tuesday morning session such problems as the customer relations aspects of current collection problems; adequate wiring — from the customer relations standpoint; service interruptions—a continuing customer relations problem; customer relations aspects of service delays; high bill inquiries—a continuing problem; and the customer relations aspects of metering problems. At the Tuesday luncheon and afternoon session

it is anticipated that a discussion group will cover, among other items, such topics as estimated final bills, bi-monthly billing and transferring final consumption.

Accounting Employee Relations

The committees' theme this year will be "Road to Successful Supervision." At the Tuesday morning and afternoon sessions six topics will be discussed, including "Am I on the Team," "Is It My Business," "Job Enlargement," "Rule Follower or Man of Judgment," "Promotion — Seniority or Ability," and "What Makes a Good Supervisor." On Wednesday morning the committees will participate in the customer activities group session with a presentation on automation—its effect on employees.

Depreciation Accounting

In addition to their aforementioned part in the general activities group session on Tuesday morning, the Depreciation Committees, after a closed committee luncheon on Tuesday, will present four papers in a Tuesday afternoon session on such topics as court and commission decisions re depreciation; depreciation practices in publicly owned utilities; case history of liberalized depreciation; and rate problems under accelerated depreciation. At the Wednesday morning session a panel discussion of the liberalized depreciation provisions of the 1954 tax law will take place.

Taxation Accounting

At their Tuesday afternoon session the Taxation Accounting Committees will consider such subjects as recent court decisions; implications of shift from engineering to field personnel in examination of depreciation and related matters; individual account vs composite depreciation rates; and tax free distribution of split-off stock. Distributions not out of accumulated earnings; deduction of reserves for estimated expenses; allocation of consolidated income taxes under SEC rule and Internal Revenue Code; and proposed and introduced federal tax legislation and regulations will constitute the program for the committees' Wednesday morning session. As mentioned before, the committees will also participate in the Tuesday morning general activities group session.

Plant Accounting and Property Records

Penniless accounting for plant accounting and property records will be offered as part of the committees' participation in the Tuesday morning general activities group session.

Following a conference luncheon at noon Tuesday, the group will present "How We Do It" papers describing how one or another company does its plant accounting work, including two papers on punched-card accounting, one on mechanization of electric meter record and another on mass property work order systems. Accounting for gas service construction costs and training plant accounting and property records personnel will complete the Tuesday luncheon session and the Tuesday afternoon session will be completed with a panel session on plant accounting and property records problems. On Wednesday morning an audience participation session, discussing such subjects as accounting for contributions in aid of construction; accounting for spare parts; accounting for gas meter installations; and the showing of a film in color on construction of a gas transmission pipe line, will constitute the program.

Long-range forecasting will be the subject of the General Accounting Committee at the general activities group session on Tuesday morning. Centsless accounting can be applied to all utility systems; development of reports for operating management; and techniques of handling deductions and other payroll items will be the subjects for consideration at the committees' Tuesday afternoon session. A resume of certain significant regulatory developments; prompt reporting and control of construction overruns; and a report on what's new in the 1954 annual reports to stockholders will constitute the Wednesday morning session, followed by an open discussion, as time permits, on long-range planning.

Internal Auditing

These committees, at their Tuesday afternoon session, will have a guest speaker, Howard L. Jones of the Illinois Bell Telephone Co., who will present "Practical Applications of Statistical Sampling as Related to Accounting Work," a topic on which he is specially qualified. This will be followed by a discussion period. On Wednesday morning negotiation and control of construction contracts and a paper on the subject "Do You Measure Up?" will comprise the program, again followed by a discussion period. In addition, the committees will participate in the general activities group session on Tuesday morning with a presentation "The New Look in Internal Auditing."

Customer Activities Group

On Wednesday morning, April 27, the Customer Collections, Customer Accounting and Customer Relations Committees, together with the Accounting Employee Relations Committees, will meet in a group session and will consider such subjects as uncollectibles as a national problem; budget billing of electric and gas space heating; let the customer know—social and business contacts with our customers; and automation —its effect on employees.

Electronics

Continuing an innovation started at last year's accounting conference to acquaint industry representatives with developments in electronics, the Executive Subcommittees on Electronic Accounting Machine Developments will hold a Wednesday afternoon session on April 27, starting with a luncheon at noon. A report on committee accomplishments will be followed by a discussion of general accounting problems with large scale computors, the Commonwealth Edison electronics story, reports by various utility companies of their plans for electronic accounting equipment and a commentary on current tools and approaches.

Highlighting the conference, in addition to the usual business machine companies exhibiting their new machines and equipment for the convenience of the registrants, the Customer Relations Committee will

(*Continued on page* 93)

Don't Sell Load Growth Short

By George E. Whitwell*

Vice President in Charge of Sales, Philadelphia Electric Company

An address before the meeting of the EEI Transmission and Distribution Committee, Washington, D. C., February 11, 1955

THROUGHOUT my more than 30 years' experience in the electric utility business, I have always been aware of the inevitable interdependence of transmission and distribution operations and of the ever expanding demands for electricity which, particularly over the last 35 or 40 years, have been due in no small measure to the active promotional programs instituted by electric utility sales organizations. My congratulations are extended to both the Transmission and Distribution and Sales Departments of the electric utilities in the United States for the over-all parts that they have played in serving well the loads which have been continuously added in almost unbelievable volume.

My assignment in this article, as I understand it, is to attempt a picture of that which can reasonably be expected of electrical load growth in the long-range future. My unhesitating recommendation is "Don't sell this load growth short."

I accept no role of prophet. I regard my job as that of a reporter who desires to bring to your attention the conclusions of those far better qualified than I to gaze into the crystal ball. Let me adhere to known facts from the past and to the forecasts of others.

Scope of Discussion

In so doing, the discussion in this paper divides itself, quite naturally I think, into three parts:

I—Past experience in electric load growth;

II—Future expectations of certain authorities for only four of the widely accepted basic economic indices in use today; and

III—National long-range predictions by qualified forecasters of residential and rural electricity sales, of total large and small light and power electricity sales, and of total kilowatthour sales.

The authoritative material which I have reviewed reflects educated opinions of recognized government and independent economists and of qualified forecasting personnel in the electric industry. They include:

(a) The Third Future Power Market Forum of Westinghouse Electric Corp. in February, 1954,

(b) The Electric Utilities Executives Conference, sponsored by General Electric Co. in June, 1954,

(c) Report of the Electric Power Survey Committee at the Edison Electric Institute Convention in June, 1954,

(d) Projections of loads to 1975 by the FPC of June, 1954,

(e) Electrical Industry Forecast for 1954 - 1970 by *Electrical World* in September, 1954, and

(f) Long-term projection of electric energy sales by an outstanding independent economist, dated November, 1954.

The purpose here, of course, is not to compare these forecasts one with the other, but rather to obtain a composite of them in order to visualize the trends of growth between probable maximum and minimum limits. Most of that which follows is taken directly from the above sources which will not be given further acknowledgment.

Past Experience

With respect to that which has already happened, I refer you to Fig. 1. As you can see, during the first 40 years following Mr. Edison's invention of the first successful incandescent lamp, total sales of electricity in this country reached only 32.5 billion kwhr annually.

By 1930, the annual use had more than doubled, reaching 75 billion kwhr, an increase of 131 per cent over 1920 sales. Contributing to this increase during the Roaring 20's was the generally prevailing prosperity, a residential building boom, tremendously extensive wiring of old

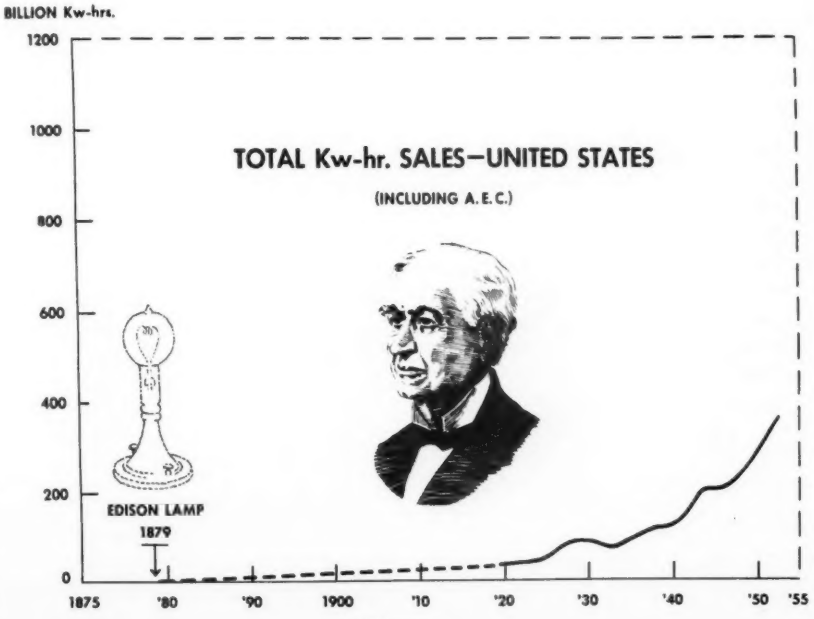


Figure 1

*The author acknowledges gratefully the valuable assistance he received in the preparation of this paper from Messrs. F. X. Kaier, G. S. Rigby and W. J. M. Auve, all of the Sales Department of Philadelphia Electric Co.

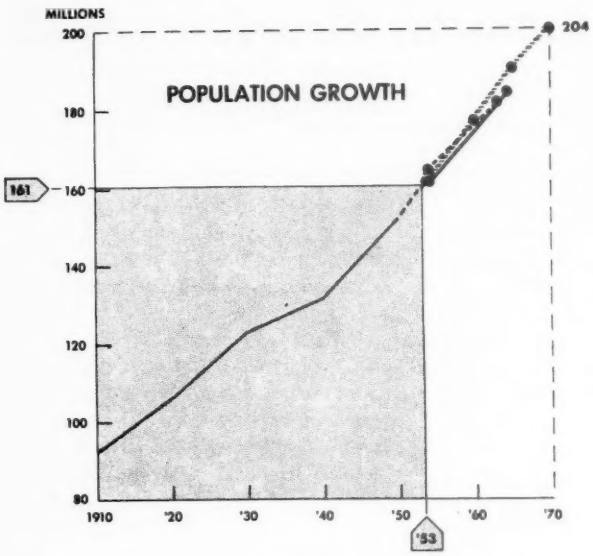


Figure 2

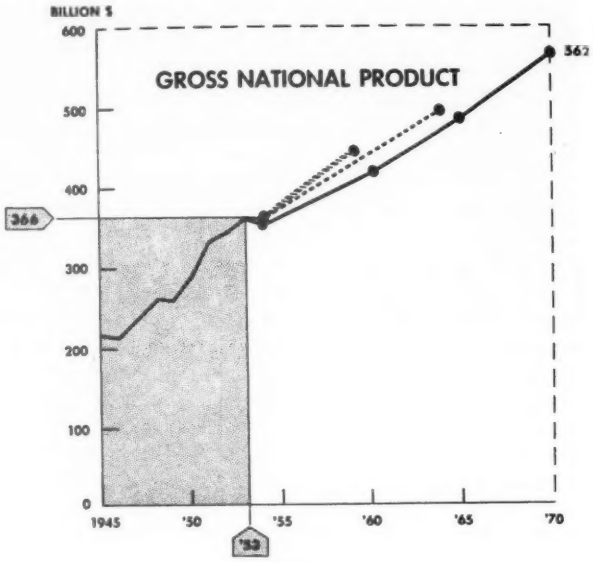


Figure 3

homes for electric service, substantial elimination of private industrial generating plants, electrification of railways, and marked expansion of utility merchandising and other sales activities.

With the stock market crash of 1929, the picture changed. Nevertheless, growth in electricity sales during the 30's was relatively large. This result was due, in large part, to active promotion of electric refrigeration; to such industry activities as the Modern Kitchen Bureau, the Running Water program and the Better Light Better Sight program; and to gradual increase in electricity use for commercial and industrial purposes, culminating in large orders for war materiel from European nations. In 1940, total sales of electricity were 58 per cent over those in 1930.

The first half of the 1940's was a period of war. The decade brought about many changes that are affecting and will affect the civilian economy for years to come. I mention only a few of these changes. Manpower shortage and inflation of labor costs were responsible for rapid increases in the mechanization of industry; higher intensities of industrial illumination were appreciated and sold; partly because of reductions in domestic help, there was more intensive use of convenience appliances in homes; the tremendous upsurge of marriages among service personnel made earlier predictions of population increases look foolish; reconversion after World War II to civilian production was accomplished in short order; pent up electrical requirements of the people were satisfied; and total electrical productive facilities of the nation were tremendously expanded. Sales of electricity in 1950 were 136 per cent greater than those in 1940.

During the 40's there appeared new and important factors in social and economic progress. They are continuing today and recognized authorities are agreed that they will continue for a considerable period into the future. We are now at the mid-point of the 1950 decade. Total kilowatthour sales estimated for a peacetime 1955 show an increase of 57 per cent during the five year period since a wartime 1950.

Take another look at Fig. 1 for a better comprehension of the significance of that which has been and is now taking place in the electric industry. Please keep in mind the nature of the slope of the curve in this figure. It will help to make the others look more possible of attainment.

Future Expectations

Now comes the crystal ball! In looking at the remaining figures, please realize that the lines indicative of projections into the future are straight ones connecting points, each located to show that expected to be accomplished by a certain specified date. These lines do not show the actual ups and downs which will be found as influences for good or bad occur over limited periods of months or even, perhaps, for a year or more. The positions of these lines contemplate nothing cataclysmic during the future which they encompass.

Most studies of electric load growth are based on trends of the national economy derived from a variety of statistical series published by the U. S. Department of Commerce. The extent to which these series are utilized by individual forecasters depends much on the nature of the forecast and the amount of detail involved in its preparation. So, before discussing the various phases of electric load growth itself, I would like to call your attention to four figures and talk briefly about the basic and most frequently used statistical series associated with forecasting.

Fig. 2 shows the trend of population growth from 1910 to 1950 according to official census figures and an estimate for 1953 by the Bureau of Census. The projections from 1953 are three individual forecasts, two of which almost coincide. The rising trend from 1910 to 1930 reflects a combination of natural growth and relatively high rate immigration from European countries.

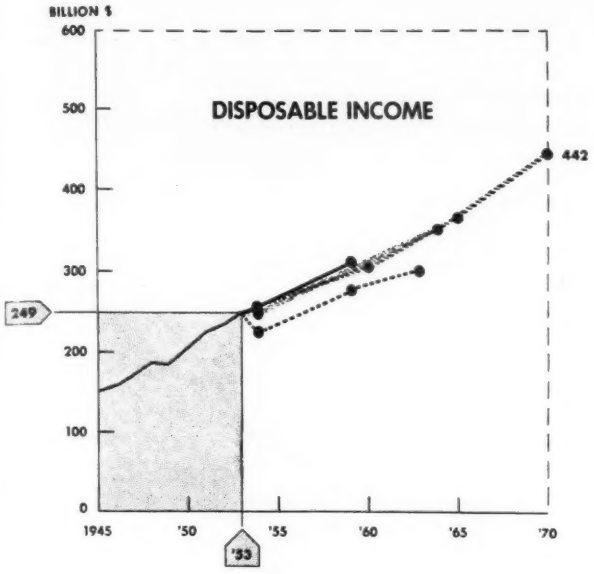


Figure 4

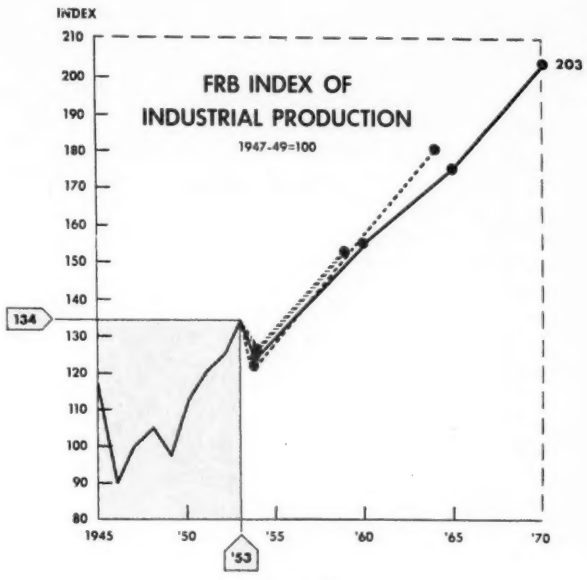


Figure 5

The stock market crash of 1929 almost immediately shut down immigration, and the ensuing depression brought about a rapid decline in marriages and birth rates. The trend curve flattened out considerably during the 1930's.

During the 1940 decade the trend again surged upward. It is estimated that it reached 164 million at the end of 1954 and 200 million are predicted for 1970.

Effect of Population

This rate of population increase, combined with greater life expectancy in all age brackets, is responsible for a number of important changes in our over-all economy. For example, it has materially reduced the percentage of total population available for the production of goods, and thus has brought about a substantial increase in the electrical requirements per worker in industry. Population growth is the dynamic force underlying the future improvement of the over-all economy.

Fig. 3 shows the trend of gross national product from 1945 to 1953 and three individual forecasts to 1959, 1964, and 1970. This series is the most composite indicator of our economic worth. It represents the market value of goods and services produced by practically all of the phases of the nation's economy. It reflects the American consumers' desire for higher standards of living. The continued trend toward better living which includes the transition of many items from luxuries to real necessities, coupled with an ever increasing population, will require tremendous increases in the supply of electricity.

Fig. 4 shows the trend of disposable income up to 1953 and four individual projections from that year on. Disposable income is basically a measure of potential spending power after taxes and includes individual savings which, if sufficiently liquid, can be readily utilized for the purchase of goods. In 1954, although expected to fall off by three of the four forecasters, it actually was slightly above the 1953 disposable income.

Fig. 5 shows three individual projections of the Federal Reserve Board's index of industrial production. This index measures changes in the physical volume of production of manufacturers and of minerals and is expressed in terms of average performance over the three year period, 1947 – 1949.

National Long-Range Predictions

With this all too brief review of a few of the basic economic barometers, let us examine, in somewhat more detail, the potential increases in the use of electricity that may be derived from the more important components of load classifications. I call your attention to the fact that, in the remaining four figures, all are plotted on absolute and comparable scales which start from zero. Accordingly, there is no statistical illusion as to the slopes of these trends or as to their comparison with Fig. 1.

Fig. 6 shows the trend of residential sales growth from 1926 to the end of 1953 and three independent forecasts to 1959, 1964, and 1970.

Fig. 7 is the same except that it has been blown up for your convenience. It was necessary here to show two trends, one including and the other excluding rural sales because both bases were used by the individual forecasters. One can well wonder whether the pace shown here, as reflected by any of the three independent studies, can be maintained. Yet, when we consider the possibilities of increases from sources presently available—even without allowance for unknown future developments—this magnitude of potential growth is not beyond reason.

Earlier I mentioned briefly population growth. Here its effect must not be underestimated. Its rate of natural growth, with variations up and down, is anticipated to continue. Population alone will account for substantial residential load increases.

Residential lighting is a component that holds great possibilities. The earliest use of electricity in the home was for lighting: yet, its growth has not been sufficient to pro-

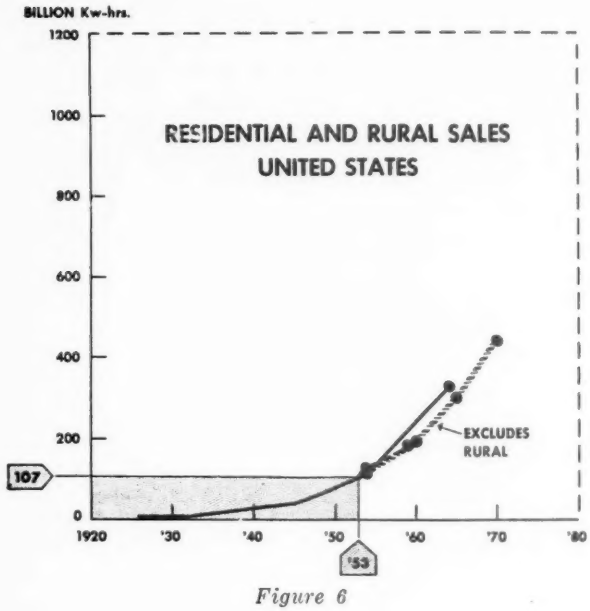


Figure 6

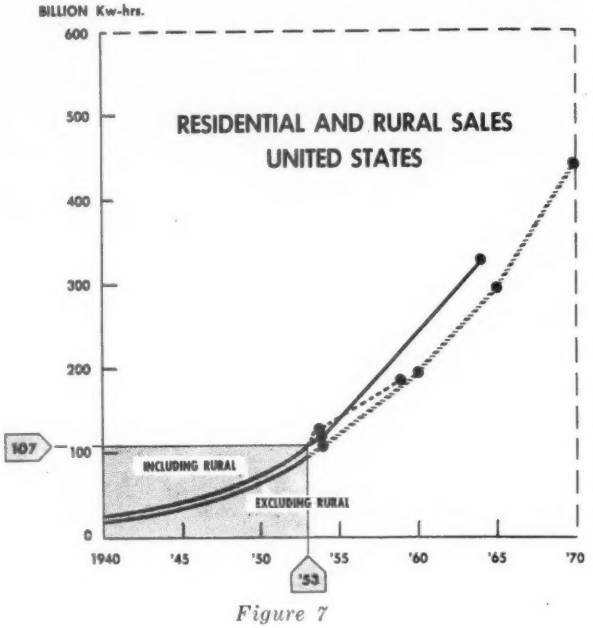


Figure 7

vide recommended standards of lighting in the average home. That home today contains only 17½ lamp bulbs, less than the 20 supplied in a modern automobile.

Television, even under today's relatively high saturation, promises substantial increases resulting, in part, from population growth and from the higher average power consumption of the color receiver—about 400 w as compared to 250 for black and white. Today's television load is estimated at 12 billion kwhr and is expected to grow to almost 30 billion over the next ten years.

The automatic washer-dryer combination will open up new sales opportunities because of the advantage of eliminating one piece of equipment with resulting lower first cost and greater convenience.

Electric cooking will be revolutionized to provide greater appeal to the housewife. Electronic ovens, using high frequency induction heating, will cook frozen meats in a matter of minutes, and thermal compartments will provide for baking and preparing foods that require conventional heat. Cooking utensils with built-in heating elements, automatically and thermostatically controlled, that can be plugged in anywhere will complement the electric range for added convenience.

Instead of an electric refrigerator, there will be a refrigeration center with all sorts of arrangements and gadgets to tie in with the modern kitchen. It will include frozen food storage compartments which may prove a milestone in the industry's drive to attain greater acceptance of food freezers and thus will make the freezer as functional in the kitchen as the refrigerator and integrated with it.

Heating and Air Conditioning

The potential growth for residential heating and air conditioning is tremendous even though it, like many other factors to which I have referred, will vary throughout the country. At the present time, national saturations are low but the appeal to the public for these devices is very strong. The relatively low annual load factors in much of the country of both electric heating and cooling and the low, though improving, power factor of the latter will require the thoughtful attention of Transmission and Distribution, Rate, and Sales Departments of electric utilities.

Complete weather conditioning, which combines heating, cooling, and humidification, will provide healthful atmosphere the year round. It can be provided, in whole or in part, in the form of electric resistance heating, the individual room cooler, the central plant system, and the heat pump.

There are numerous other devices, and I am only scratching the surface, such as the dishwasher, the disposal, electric bedding, water purification, and all of the smaller common appliances that will be required to satisfy the ever increasing markets resulting from population growth. Then there are the appliances yet to come.

I have generalized pretty much on the make-up of the increases that are expected to produce the growth shown in Fig. 7. Whether or not it appears to be fantastic, there is not too wide a difference in the three forecasts. In fact, the minimum and maximum forecasts would practically coincide if both started from the same base in 1953.

Fig. 8 shows the trend of sales for combined large and small commercial and industrial light and power with four projections for varying periods up to 1970. In spite of the declining trend in new small commercial establishments, there still exists a great unsold market in the millions of older offices and small retail shops of the country. This modernization market has numerous potentialities, principally in the fields of improved lighting and air conditioning.

The number of applications of electricity in industry are too numerous to consider individually, but all will show substantial increases if

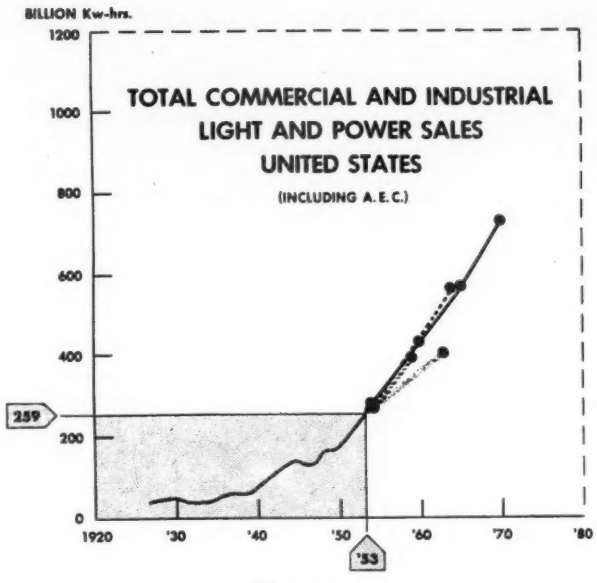


Figure 8

the requirements imposed by natural growth and higher standards of living are to be supplied. In the metal industries, for example, the mining and washing of high grade iron ores from Michigan and Minnesota require only 2 to 4 kwhr per ton, but eventually the mining and concentrating of low grade taconite will require 75 to 80 kwhr per ton. In the production of steel, there is an increasing trend in the use of electric arc furnaces for melting and of high and low frequency induction for heating. In the non-ferrous groups, the use of power per ton of copper is constantly increasing as the grade of ore declines.

Aluminum and Magnesium

The use of aluminum and magnesium is constantly increasing and both require large quantities of electricity for their reduction. Now we have two important new metals, titanium and zirconium, which will find extensive use in industry. Titanium will be an important competitor of aluminum and magnesium. It requires approximately 38,000 kwhr per ton to produce, half of which is used in the form of electric heat. Zirconium cost about $250 per lb in 1949 and was in very short supply. It is now down to $20 per lb and is replacing tantalum for tank linings, pipes, valves, immersion heaters, and similar applications. Its reduction is an electrolytic process requiring large amounts of electric energy.

Coal remains the basic fuel for the electric industry as well as for many other industries. The increase in use of electric power in coal production has been tremendous, not so much due to the handling of poorer grade material but to increased mechanical cleaning and the use of more mechanization underground.

In the pulp and paper industry, the trend of increasing power will probably parallel the per capita growth of paper consumption. This growth is currently at a rate twice as fast as the average annual percentage increase of population.

In the rubber industry, kilowatthour growth will show a steadily rising pattern in response to the growing rate of automobile production, and to new uses of rubber in machinery, bedding, furniture, paints, and road surfacing materials.

Mechanization Trend

Finally, and you will agree that I have omitted too many other examples, there is the continuing trend of mechanization or of automation. In 1946, the average kilowatthours per man-hour in industry, excluding reduction of aluminum and magnesium which require large quantities of energy, was 4.55. In 1953, it was 6.94 or an increase of 53 per cent over the seven year period. This trend is industry's answer to ever increasing labor costs, and most certainly will become more important in our highly competitive type of economy.

I will dispose of electric requirements in atomic energy research by merely mentioning that they are included in over-all totals in this paper. The effect of all increases on the existing large and small light and power loads produces a projected

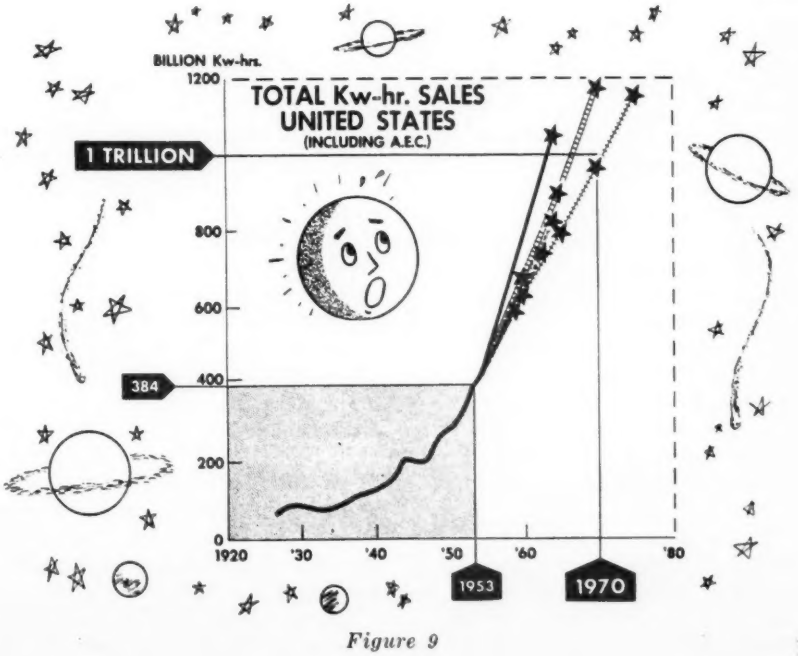


Figure 9

trend which, like the residential, seems to be fantastic.

The composite of all predicted load growth is shown in Fig. 9. Here are 11 plotted points from six independent estimates and all seem to be "shooting for the stars." The difference between the minimum and maximum limits does not matter much insofar as the purpose of this paper is concerned. It is highly significant, however, that according to these authoritative opinions, the trends of electric growth are expected to continue at a phenomenal rate.

It seems only a short while back to 1938 when the industry passed the 100 billion kwhr mark in sales. Now, looking forward, it is only 15 years to 1970 when, according to the most conservative estimate, total sales are expected to reach the trillion mark. When I looked at the trend chart and saw the scale go up to one trillion, I tried to recall if, anywhere in business, I had ever seen that figure. The only other people, to my knowledge, who use that kind of number are the astronomers. Whether or not we can comprehend such magnitudes, we must recognize their significance if we are to meet these future demands to the best advantage of customer and company.

Increased Wiring Capacity

I am sure every electric utility executive recognizes the need *now* for increasing wire capacity both on and off the customers' premises. Today home wiring programs are being stepped up greatly. You have noticed that the leading copper companies are spending large sums, through popular magazines and newspapers, for advertising adequate home wiring. Shelter magazines are promoting it. Electric utility companies are expanding their efforts along this line. Such promotion, I believe, will continue over the years as a result of the demand by electric utility customers for the many devices to be found on the market. These devices, however, can be fully useful or even available to them only to the extent that they are willing to provide sufficient wiring capacity.

The increasing efforts of electric utility sales organizations and others to induce existing customers to rewire their homes or buildings and to insure modern wiring in new structures are a "must" from here on out. Otherwise, the load increases predicted for the years ahead cannot be so accommodated that the customer will obtain from his electrical devices what the manufacturers have built into them.

No small part of this job of increasing total wire capacity rests with the people in Transmission and Distribution who will be responsible for transmitting and distributing enormous additional quantities of power from the generating station to the customer. Their increased efforts, mostly off the customers' premises, will be, as in the past, in cooperation with those of all the other interested groups in the electric industry and of the customers themselves.

It will require their alert attention and action to be sure that, for example, each home with newly bettered wiring is promptly supplied properly with electricity from their companies' distribution circuits. Knowledge and interest by service maintenance personnel will be essential in supplementing the work of sales people and others with customers whose fuses repeatedly blow. I am sure that, as in the past, they will meet these challenges with zest and skill.

The problems to be encountered and their solutions in order to insure that all of us in the electric industry do nothing to limit expected long-range load growth are limited only by our imaginations. One future approach to these problems, however, is essential.

"DON'T SELL LOAD GROWTH SHORT."

Purchasing and Stores Committee Announces Plans for Annual Spring Meeting

THE keynote of the annual Purchasing and Stores Committee meeting in Birmingham, Ala., on May 9, 10, and 11, 1955, will be economy. Many presentations will be made by task groups of the general committee who have been studying each subject for the past several months.

Illustrative of the emphasis on lowering costs are such subjects as price analysis for determination of a fair price and how to get it, how does the interest and cooperation of all departments affect expenditures and investments in materials and supplies, analysis of costs of doing business and control and operation of tool supply.

The principal approach to cost reduction on this program is through administrative techniques, as illustrated by the subject matter. Each group has conducted surveys of various member companies both as to practices and concepts. New approaches to these problems in cost reduction will be presented.

Additional subject matter to be considered at this annual meeting will be repeat requisitions, streamlining stores paper work, report of Purchasing and Stores Department to top management and the do's and don't's of inspection, testing, and acceptance of material and equipment. An up-to-date report on the status of the Standard Packaging Subcommittee will be presented at the meeting.

This annual meeting is being held in the Dinkler-Tutweiler Hotel in Birmingham and a message of welcome on behalf of the host company will be extended by H. Neely Henry, Vice President of Alabama Power Co. Luncheon sessions are scheduled for Monday and Tuesday, May 9 and 10. L. M. Smith, President of Alabama Power Co., will address the group on Monday, and J. F. Crist, Vice President, The Southern Co., will address the Tuesday luncheon group.

An excellent opportunity is afforded the registrants at this meeting on Wednesday, May 11, to visit the soft coal mine operations and new electric plant of Alabama Power Co. Those attending the meeting may also have occasion to visit the Purchasing Department or stores building of the host company.

As in previous annual meetings, arrangements are being provided for a reception and banquet on Monday evening. For those ladies who may accompany registrants to this meeting, a program is being provided for their entertainment on May 9.

Power Equipment to Get Atomic Test

THE effects of an atomic explosion on electric service lines and other electric equipment will be tested in April at the Nevada Test Site, Harold Quinton, President of the Edison Electric Institute, has announced.

The invitation to participate in the atomic test was extended to the Institute by the Federal Civil Defense Administration under whose direction the test will be made.

The Bechtel Corporation of San Francisco, Calif., has been engaged by the Institute to carry out the engineering construction supervision of the electric structures for the test.

Data from the test is expected to provide valuable informaion to electric utility designers and operating engineers in their civil defense studies and planning.

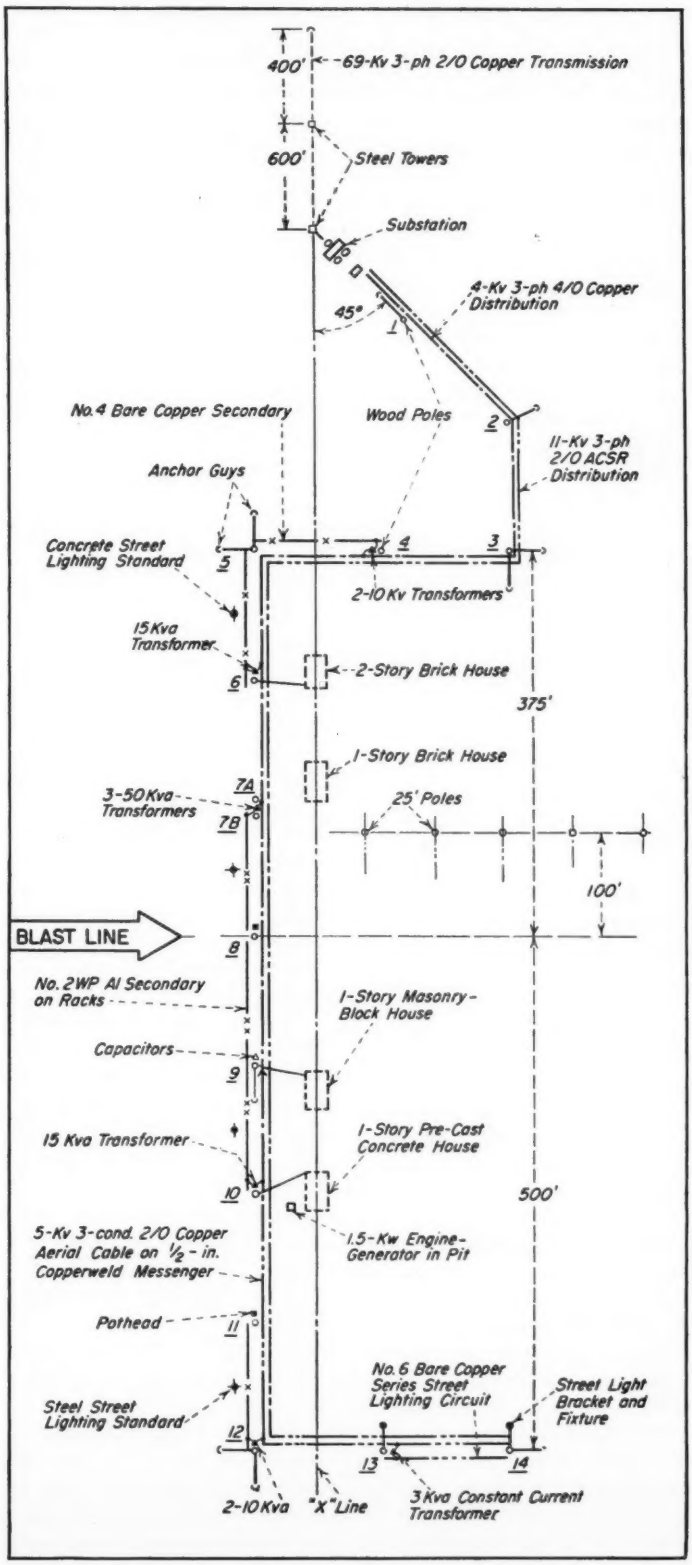
One of the serious concerns of civil defense officials and the electric utility industry is the potential effect of atomic bomb blast pressure on electric transmission and distribution lines, substations, and other facilities serving the electric consumer.

Expected Indications

This test is expected to indicate relative vulnerability of electric system parts to atomic blast, and the nature of repair problems in the event of an attack. Additionally the test is expected to provide data for estimating the extent of damage that would occur to electric facilities in so-called fringe areas of destruction where restoration of service by electric utilities for homes, factories, and the rehabilitation effort would be of urgent importance after an atomic explosion.

To obtain the desired information duplicate installations at different distances from the test explosion and outside the area of total destruction will be constructed. Each installation is based on a transformer substation of the kind found in most communities. On one side of the transformer substation will be typical transmission lines and towers. On the other side will be typical power pole wiring with associated

(*Continued on page* 94)



Adequate Wiring Program Designed for Every Branch of Electric Industry

THE new 1955 electrical industry sales action program to put modern-day electrical capacity into the average American household has been termed by the National Adequate Wiring Bureau, New York City, the "first program in 15 years to cover the entire wiring waterfront."

The Bureau announced that distribution is now being made of adequate wiring campaign material for the year ahead, in the form of a single master package usable by every branch of the industry. Introduced to conferees at the 11th Annual Wiring Conference held in Chicago, February 24 and 25, the master kit will go to chapter managers of contractor associations and the Bureau's extensive mailing list of electrical industry leaders at the local level directly concerned with the promotion of adequate wiring.

The wide-ranging promotion effort was seen as evidence of an industry belief that long-sought coordinated action by all electrical business elements must become a "working level" liaison.

Seven separate kits for specialized use, as contained within the covers of the master package were described as the electrical industry's seven keys to sales success, by L. E. Barrett, chairman of the National Bureau's Plan Committee. "These seven kits are our seven keys opening doors to sales opportunities for everyone in the electrical field.

"We are now able to offer material developed individually for the wiring modernization market, for the new home market, for electrical contractors, for electrical dealers, for the educational field, and for the formation of new local adequate wiring bureaus. Each group whose economic life is affected by the status of home wiring is thus able to see exactly what sales implements he will have when he starts to sell adequate wiring; and exactly what tools his allies are using. This gives him needed perspective on what the entire industry is doing to achieve the same result. It will put an end to the feeling which the lone promotion-minded contractor, for instance, sometimes justifiably has had—that he alone is out there struggling with the problem of educating the consumer in the fact that electrical living and wiring are inseparable twins. This year he can be assured that we know it's a national problem, being attacked at many levels. The evidence is all put before him at meetings of his electrical group."

Campaign Kit Sales Aids

Promotion of home wiring modernization, an activity which has been spreading during the past year with the advent of wiring financing plans in 25 power company areas in the United States, is supported by five sales aids in the 1955 master campaign kit. Two new 9 x 11-in. booklets are provided. One, titled "Improving Your Home's Wiring System," is a two-color, 16-page consumer publication. The other, "Wire-on-Time Plans That Tick," contains a step-by-step description of the mechanics involved in setting up financing plans for wiring modernization. Its companion piece is a consumer folder, "What's All This About Wiring on Easy Monthly Payments?"

The National Adequate Wiring Bureau's program for certifying the wiring in new residential construction is represented by a kit of new certification materials, direct mail and handout pieces for builders, consumer folders and booklets.

As an accompanying action—the National Electrical Contractors Association will mail the *Residential Wiring Handbook*, a standards publication of the electrical industry, to architects and to members of the National Association of Home Builders.

For the first time, sales material especially designed for appliance dealers to help them sell adequate wiring to their customers along with the appliance, has been made available by the National Bureau. One striking new two-color folder bluntly tells the dealer, "You're Being Robbed" by inadequate wiring in the customer's home, and documents the dealer's loss in potential sales. Another is a hand-out piece showing the consumer how home wiring affects appliance operation.

On the wholesalers' level, the impetus to adequate wiring action will come from the National Association of Electrical Distributors. Arthur W. Hooper, director of the association, announces the appointment of a special adequate wiring committee to deal with problems of distributing literature, planning programs, and contacting electrical contractors and dealers.

During 1955 the National Adequate Wiring Bureau will continue an advertising schedule in selected consumer publications, according to its plan committee chairman. It will also undertake an expanded editorial information program which will include a series of news features for metropolitan dailies, monthly mat releases to the smaller papers, and scripts for women radio editors.

In addition, an educational kit of material revised to include the new 1955 wiring standards is scheduled for distribution to home economics and vocational teachers.

The number of local adequate wiring bureaus licensed to certify wiring in new homes is now 86, the Bureau reports. New bureau formation has been accelerated during the past year by an unprecedented recognition on local levels of the effect of "lights only" wiring on the market for electrical goods and services. To meet the local demand for guidance, a new basic planning guide has been made part of the 1955 sales action kit. Entitled "Organizing and Operating an Adequate Wiring Program," the 24-page book in color describes personnel requirements for bureau operation, how operating costs are allocated, and program launching procedures.

Electrical Modernization of Multi-Family Dwellings in New York City

By J. O. Covington

Manager, Adequate Wiring Bureau, Consolidated Edison Company of New York, Inc.

An address before the 11th Annual National Adequate Wiring Conference
Chicago, Ill., February 25, 1955

SEVERAL years ago it became evident to the management of my company that our customers were curtailing their use of electrical energy because of inadequate wiring, and in 1953 it was patent that corrective action was needed. A crystal ball was not needed to arrive at this conclusion because many facts pointed up the situation, such as:

1. Notwithstanding many years of educating customers that it is their responsibility to replace fuses on their wiring systems, we received 262,000 "no light" calls in the preceding 12 months. Of course, the "no light" calls could have been caused by any of several reasons, but the vast majority resulted from blown fuses attributed to overloaded wiring.
2. Manufacturers and distributors reports of the appliance sales that could not be completed because of insufficient wiring capacity which the appliance purchaser did not wish to reinforce.
3. Many letters and telephone calls from customers in which they stated such things as "We are now being told not to use our appliances, which is rather silly, because we did not buy these machines for exhibition in our apartments," or, "I recently bought an air conditioner and a television set which cost several hundred dollars and now find that I can't use them simultaneously. I have the unhappy alternative of being cool but bored, or hot and entertained." The one thing pointed up by all of these complaints was inadequate wiring.
4. Known instances of landlords prohibiting tenants from installing heavy wattage appliances, such as air conditioners and broilers and even washing machines. One owner of an apartment project built since World War II sent his tenants a notice which said, among other things, that in November, 1949, 200 apartment fuses blew out and that in November, 1952, there were 500; that the electric consumption for the same number of apartments had increased 35 per cent in three years and he suggested that the refrigerator be disconnected temporarily when using a roaster.

New York City does not have an Electrical League or Association, so that the promotion of better wiring has been almost entirely the effort of the utility company alone. Since our program was officially launched on December 1, 1953, three other trade or industry groups have formed adequate wiring committees, and while we cooperate with them to the utmost, they do not have the resources to carry on a large scale, city-wide promotion.

I have been asked why Con Edison's adequate wiring promotion includes multi-tenanted buildings.

Location of Residential Customers

Although we have about 850,000 customers in one- and two-family houses, 74 per cent of our residential customers live in apartment buildings. Our system territory is practically all of New York City and Westchester County and located therein are approximately 167,000 apartment buildings containing over 1,800,000 dwelling units. This averages only 11 dwelling units per building, but a structure of four or more dwelling units is a multiple family building under New York State laws.

We have many thousands of old 4- and 5-story brownstone quondam private houses that have been converted into 2- to 10-dwelling unit apartment buildings. Although our most common apartment building is the 6-story, 24 or more family building, we have every type of apartment structure imaginable and some might be unique in other than our territory. To name but a few, there are the two- and three-story garden type, and we have one such project of 220 buildings for only 1,600 apartments, another multi-building development housing 12,272 families, we have single buildings with over 300 apartments, we have individual buildings 38-stories tall, there are duplex and triplex apartments and there are individual apartments containing one to 36 rooms. A relevant fact is that the majority of the individual apartments average about 3.5 rooms each.

Variations in Wiring Design

The variations of interior wiring design in these buildings exceeds the number of different types of buildings. Let me mention some of them.

The first difference occurs in wire and raceway materials. Non-metallic sheathed cable shall not be employed in New York City (B30-71.0 City Code). All other standard materials can be used although permissible practices will limit the use of some to certain situations. The materials most commonly encountered are armored cable (BX) and rigid conduit containing several single conductor cables. In most instances rigid conduit is used for vertical risers to the fused distribution panel in the individual apartment with branch circuits originating therefrom of armored cable. The difference in material is important because rewiring existing raceways with larger capacity thin wall conductors is not possible where the old wiring is armored cable.

The next variation will be whether the apartments are metered individually or whether there is a "single meter" for the building and the tenants electricity usage is "included in the rent." There is no residential "submetering." If the usage is included in the rent, we can have the feeder wiring on the load side of the meter common to more than one dwelling unit.

A third difference would be the location of meters for individually metered apartments. Usually our meters are located in the basement, although in buildings about 30 or more years old they may have been installed on the floors, either in the public halls or inside the individual apartment. Today we will not permit an original installation of meters inside the apartments although we do recommend they be located in public areas on various floors and connected to common risers so as to benefit from diversity between tenants. At first thought this would seem to be a money saving design. It is—as far as the feeders alone are concerned. Even though the meters would not have to be at a single point on each floor, thus permitting more than one common riser to a floor, the horizontal runs on the floors may nevertheless make common feeders uneconomical.

Economical Meter Location

The most economical design might be one of common risers with meters installed in a public hall cabinet or room on every third floor. From the meter bank a single conduit housing several conductors would be extended into a dwelling unit on that floor and then extended one floor up and one floor down to serve three apartments. Sometimes this is not feasible because the cover over archway steel may not allow embedding therein larger than 1¼-in. conduit and if each apartment is to be supplied three-wire service using No. 6 ungrounded conductors, they cannot be installed in this size conduit.

It should be noted that wiring above the basement is run concealed and the feeder risers are almost inevitably buried in finished walls. Almost anything in the world can be found in New York apartments more often than vertical feeders installed in a riser shaftway.

These are the major differences, although by no means do they encompass all of the variations we have encountered. For instance, the feeder riser to an apartment may not terminate in a fused cutout in the apartment from which branch circuits will originate but it will extend through the various rooms and pick up the lighting and receptacle outlets. In such case the riser or house line would have its fuse protection in the basement in the end line cutout at the bottom of the riser. That arrangement complicates rewiring because a larger riser requires fusing where we pick up the existing wiring within the apartment.

Rent Inclusion Cases

There are cases where a part of a tenant's service is individually metered and part is included in the rent. There are rent inclusion cases where lighting and small appliance requirements are wired in a conventional manner and served through branch circuits emanating from a fused distribution panel in the apartment, but vertical feeders running past windows serve only air-conditioner outlets in a tier of several apartments. Another peculiarity is the rent inclusion case where a riser conduit serves a similar single room in each apartment of a tier of six and, inasmuch as the feeder wires are not reduced in size when tapped on each floor, the fuse protection is in the basement at the bottom of the riser.

The load left on our non-standard direct-current system is being reduced each year but it does serve all or part of the requirements in the neighborhood of 100,000 residential users. A few individual apartments are supplied both d-c and a-c and most all buildings supplied with d-c, have some part thereof supplied a-c. Both a-c and d-c conductors may be in the same raceway under certain conditions and a common neutral supplying more than one apartment is a regular occurrence, but it also may be common for both a-c and d-c.

The a-c service from the street to all but the smallest buildings will be three-phase and as long as the load is balanced within the building the wiring to an individual apartment might be either two-, three- or four-wire. However, two-element meters cost about 2½ times as much as a two-wire meter and a three-element meter about five times as much, so that we generally discourage three-wire metering on customer wiring smaller than three No. 8 conductors to an individual apartment and four-wire meters are limited to those large load cases that cannot be supplied with three-wire meters.

In addition to the physical conditions described, life is complicated somewhat more by the fact that we have controlled rents of most residential premises and the maximum permitted rent established by the State Rent Commission cannot be increased without its approval. Rarely will a landlord undertake the expense of rewiring unless the cost can be returned rather quickly from higher rents. Increased rentals can be obtained for a change in the landlord's services or accommodations to his tenants. If he secures written consents from at least 75 per cent of the tenants the Rent Commission is not likely to be overly concerned with the nature of the change. But getting such tenant consents is an onerous chore.

However, the landlord can apply to the Commission for a rental increase to recoup his cost for a major capital improvement without securing written consent from the tenants if he can establish that the expenditure is for an essential service. In this case the Rent Commission informs each tenant of the landlord's application and gives the tenant an opportunity to file an objection if the tenant wishes. This plan requires that the landlord's application to the Rent Commission include a report as to the present and proposed wiring situation, and contractor's bids for the work. If the Rent Board considers the case favorably, it will issue a "Prior Opinion" indicating the rent increase it will authorize if the work is done. When the work is done and documentary proof furnished, the Board issues an order establishing new maximum rents and their effective date. Such order does not set aside the terms of an existing lease. The Rent Commission has been ruling these cases on the basis of rental increases that would recoup the landlord's expendi-

ture in anywhere from five to ten years, but of course, not all applications have been approved.

Although it is not necessary, before filing his application the prudent landlord would write each of his tenants and tell them of the present wiring situation, what he proposes, the approximate rental increase he will apply for and invite the tenant to communicate with him if there is any question. The co-operatively owned apartment building is not involved with the Rent Commission, but getting all of the tenant-owners to agree to put up their share of the rewiring cost is apt to be a more difficult undertaking to the co-operative corporation directors than confronts the owner of a controlled rent building.

Some understanding of the physical and rental conditions has been necessary to clarify the New York situation. The foregoing may give the impression that the situation is thoroughly confused. Actually, it is not as bad as it may sound; at least we are accustomed to it and the variations make the rewiring solutions interesting.

Requirements of Electrical Code

A new Electrical Code of the City of New York is in draft form, but the present code since December 27, 1943, has stipulated that the minimum service entrance conductors to a private house shall be two No. 8 and to a dwelling unit of an apartment building the minimum is two No. 10 or three No. 12 if the feeder is 40 or more ft long and supplies two branch circuits. Prior thereto, apartment building feeders could have been as small as two No. 14 conductors. The application of the code to feeders supplying more than one dwelling unit, such as in a rent inclusion case, will not produce even the minimum just stated. For instance, the common way of wiring co-ops involving FHA warranted mortgages is for a four wire No. 8 riser to serve six apartments, which means two apartments are connected to each ungrounded conductor and thus divide 40 amp of capacity. Because of the small amounts involved, I do not think diversity between two apartments creates unrestricted capacity equal to the minimum required for individual feeders to each apartment. The inadequacy of such wiring is evident from the number of buildings where the occupants are not permitted to install heavy wattage appliances, and the many requests to us for rewiring studies. The climax happened in December, 1954, when we were asked to make a rewiring study for a project in Brooklyn that was not to be completed for occupancy until January, 1955.

Now to get to cases. We have found existing wiring systems where ten apartments were supplied from a common three wire No. 14 riser so that an even division of riser capacity was only 3 amp at 120-v per apartment. Conversely, we have encountered evenly divided capacity in existing common risers amounting to 260 amp per apartment. Analysis of enough studies to form an adequate sample showed an existing 120-v capacity averaging only 17.6 amp per apartment, and the majority of the cases are those with merely a two wire No. 14 supply to each apartment.

We made a survey involving 541 apartment buildings and found 78½ per cent were inadequately wired to supply the equipment owned by the tenants; 57 per cent of the tenants expected to buy additional appliances but only 7 per cent of the apartments had wiring suitable for supplying the new appliances in question.

The dollar sign is omnipresent in all building wiring, but it is a veritable giant in apartment buildings and so often it is necessary to tailor the suit to the cloth. The wiring capacity you can get seldom is what you would like.

Price Considerations

In selling a private house builder on a service entrance job of three No. 2 conductors and 100 amp entrance switch instead of the smaller three No. 6 wires and 60 amp switch, you obtained an increase in capacity of 9.6 kva, or 73 per cent more, up to the distribution point on those premises. A job well done, but you were selling something that cost another $40, maybe $60. Another 9.6 kva of capacity to the equivalent fuse panel in an apartment will cost another several hundred dollars. For a fairly typical New York building you are talking about $50,000! So you spend considerable time mulling over thermal capacities and voltage drops and other things common to every structure, because you know how hard it is to get each little kva—and so you treat them most carefully.

In view of the economic problem, a rewiring study might be based on one of two approaches as desired by the owner; namely, rewiring existing riser raceways for the maximum capacity obtainable therein, or for installing the wiring required to serve an amount of load specified by him.

Sample Conduit Rewiring Job

Let's look at a conduit rewiring job. Increasing the capacity of the building entrance switch, mains, and house distribution seldom present difficulties as they are located in the basement and physical conditions are favorable.

In an existing raceway, No. 12 or 14 conductors can be replaced, wire for wire, with No. 8 thin wall conductors within the permitted 50 per cent conduit fill. Even though No. 8 thin wall conductors usually encounter an 80 per cent derating to 32 amp because of the number in one raceway, this is no handicap because compensating capacity for voltage drop more than offsets the capacity reduction from derating. A pair of No. 8's is not adequate wiring, and our reports to the owner wanting such a job say so. However, it does constitute a substantial and worthwhile betterment, and when the usual two circuit fuse cutout in the apartment is replaced with a four circuit panel and a new No. 12 branch circuit run to the kitchen, with one fuse position as a spare, we have a system that is considerably better than the one replaced. From the information given to us by landlords and contractors, this sort of a job costs approximately $125 per apartment and a rental increase of $2.00 per month pays for it in about five years, or an increase of $1.50 per month would recoup the cost in about seven years. Rewiring of this nature has been done in 20 family cold-water flats where the three-room apartments rented for only $16 a month and the four-room apartments for $23.

However, by no means are all of the rewiring jobs of such meager

capacity increase. Buildings have been rewired where the two No. 14 feeders to each apartment were replaced with three No. 6 and several new branch circuits of No. 10 or No. 12 installed. In a "rent inclusion" building of 160 apartments we have had the existing wiring left intact and supplemented it by five new risers, two of which were four-wire 500 MCM and three were four-wire 350 MCM with three-wire No. 6 taps taken into each apartment and connected to new fused panels to supplement the existing system. Another rewiring job was the installation of two No. 2 feeders to each of the 61 apartments in a 15-story building and eight and 12 circuit panels installed in each three- and four-room apartment respectively. The work through the apartment panels cost $283 per apartment. As the apartments become vacant new No. 12 branch circuits are being installed; four to the three-room and five to the four-room apartments, at an additional cost of $400 to $500 per apartment. These three- and four-room apartments will have eight and ten working circuits and we think that is fair capacity for supplying lighting and small appliances.

Appliance Saturation

This type of load can account for more kilowatthours and need more wiring capacity than you might think. Electric range and water heater saturation in our territory is low and both are lower in multi-tenanted buildings than in private houses. Therefore, provision for their use is not a part of our apartment wiring picture. Washing machines and dryers are usually coin-operated and installed in the basement, although our previously mentioned survey of 541 apartment buildings developed that 18½ per cent of the tenants owned washing machines located in their apartments. The same survey developed a broiler saturation of 50.2 per cent and an air conditioning saturation of 17.8 per cent, with another 33.8 per cent of tenants stating that air conditioning was their most wanted appliance. Indeed, in the $90 or more per month rental range, those who "have" or "want" air conditioning amounted to 76.2 per cent of the total surveyed customers in this rental range. Thirty-two per cent of the customers had not bought additional appliances because they knew their wiring was inadequate. Only 1.9 per cent gave appliance operating cost as the reason why the most wanted appliance had not been bought. There were 48.6 per cent of these customers wanting better lighting and of these 67 per cent wanted it for reading.

Need for More Wiring Capacity

Typical three- and four-room apartments in New York contain gross areas of around 600 to 800 sq ft respectively and the kitchen may be disproportionately small. We have thousands of apartment customers who use gas for cooking, have central heating and hot water supplied by their landlord, and yet who use from 3,000 to 5,000 kilowatthours per apartment per year for lighting and miscellaneous appliances. Even though the private house customer is a better prospect for heavier wattage appliances, and more appliances in general, than is the apartment tenant, nevertheless, our residential customer has increased his average usage about 100 per cent in the last decade. Apartment tenants today need considerably more wiring capacity than is generally provided. The capacity problem includes an element that is not so important in the private house, and that is the capacity to compensate against voltage drop. Apartment house mains and feeder distances are such that it is quite common to need more than half the rated thermal capacity of conductors to offset voltage drop. Or saying it another way, conductors of such length can deliver at proper voltage only 40 to 60 per cent of their electrical code rated thermal capacity.

Nation's Apartment Buildings

Most everyone has some apartment buildings in their territory and, according to the last Federal Census, 11 per cent of the nation's dwelling units are in five or more family apartment buildings. Apartment buildings are something other than town landmarks in many cities because the census states that Boston, Newark, Jersey City, Chicago, San Francisco, St. Louis, Washington, and others have a very appreciable number of dwelling units in multi-family buildings. We strongly urge the extension of adequate wiring promotions to the apartment building because those landlords and customers need your help.

In New York we are doing spade work and will be doing so for some time more. Yet, in the little more than a year that we have had our program underway, we have been involved in the rewiring of 86 apartment buildings containing 3,887 dwelling units to which the average capacity increase was 3.13 kva. In addition, 30 new buildings with 2,006 dwelling units made capacity increases of 2.46 kva per dwelling unit over the amount originally planned.

The capacity is measured by the rating of the wiring; i.e., feeder riser to the apartment. We would not count it as a capacity increase if the system were reinforced in the basement only and risers not increased. Nor do we include in our records those buildings which are rewired without our having participated in the studies. An extreme example is the project of twenty-one 15-story buildings aggregating 2,495 apartments which were rewired with a 3.6 kva increase per dwelling unit. We were not in on the case, so it is not in our previously stated figures. And there were others, too.

Company's Adequate Wiring Bureau

Our Adequate Wiring Bureau is a part of our Sales Department and functions as a service organization for our various territorial Sales Offices which are responsible for selling the company's service to our customers. As requested by our Sales Offices, we make studies and reports on rewiring old buildings, although new buildings are handled by review and oral discussion of their plans with the owner, his architect, or engineer (if one is engaged) or electrical contractor.

The wiring problem is of interest to building owners, realty management firms, realty appraisers, architects, engineers, electrical contractors, mortgage institutions as well as non-mortgage lending commercial banks, code and other governmental agency authorities, electricians' labor union, electrical equipment manufacturers and distributors, and,

(*Continued on page* 93)

Industry Recognizes Heroism Through EEI Resuscitation Medals

TO those heroic men who have restored life to a fellow worker, EEI Resuscitation Medals are presented as tangible recognition of their unselfish and often perilous actions. These honors express on an industry-wide level the appreciation previously made known by individual companies, by co-workers, and, most especially, by the victims themselves.

Although it is earned for quick, efficient action within a brief period of time, the EEI Medal often reflects long periods of patient attention to detail in safety training that anticipates the tragic moment when just such principles must be applied.

In recognition of the honor that has been bestowed upon these men when the EEI Medal was presented to them, the BULLETIN publishes data on individual resuscitation cases as they become available. The completed cases for which EEI Medals have been presented most recently are summarized on the following pages.

ROBERT CONNOR

Niagara Mohawk Power Corporation

As part of an over-all job of rebuilding a distribution circuit along North Ellicott Creek Rd. in Erie County, N. Y., a Niagara Mohawk Power Corp. line crew was dead-ending a 4800-v, three-phase circuit, which gave 2770 v to ground, at Pole No. 463. It was about 3:20 p.m. on May 14, 1954. Linemen Bernard Shocknesse and Robert Connor, on top of the pole opposite each other, had finished dead-ending Phases 1 and 3 and were working on Phase 2. Both men had taken up the slack in the wire with chain hoists. Shocknesse, wearing rubber gloves and protectors, skinned the covering from the wire on his side and placed it in the dead-end clamp. He inserted the front U bolt and, while putting the nuts on it, noticed that the phase wire was a little low because the come-along had slipped. As he started to take up more slack with his chain hoist, the dead-end clamp snapped, releasing the slack and causing Shocknesse to lose his balance. As he fell, his right arm hit the bare spot on Phase 2 where the dead-end clamp was to be attached and his left shin contacted a grounded crossarm brace. (The crossarm brace had become grounded when Shocknesse's left climber stirrup contacted an anchor guy, which was grounded through contact with an open telephone wire, and the left climber shank contacted the brace, grounding it.) Shocknesse received the 2770-v shock and fell back in his belt away from contact, his left leg between the arms of the lower double crossarm. He was unconscious and apparently not breathing.

Seeing the arc, Connor immediately reached over the top crossarm and pulled Shocknesse up so that his back was against the top crossarm. He encircled Shocknesse's body with his arms, his hands just above the injured man's stomach, and, within seconds after the shock, started a modified version of Oesterreich Pole Top Resuscitation. Lineman Robert Weitz, who had climbed the pole immediately after the accident occurred, relieved Connor with the resuscitation after the latter had worked for about two minutes. Lineman Alvin Leith, who had climbed the pole with Weitz, helped hold Shocknesse in position and cleared the victim's mouth while resuscitation was being administered. Weitz felt Shocknesse's heart start to beat within a few minutes and stopped resuscitation when Shocknesse started breathing normally. In all, artificial respiration had been applied for about four minutes.

Shocknesse, conscious and clear-headed, said he was alright and that he could climb down the pole by himself. Connor, Weitz and Leith, however, restrained him and helped lower him to the ground by means of a small set of blocks. Shocknesse rested until an ambulance arrived to take him to a hospital in Buffalo. N. Y., where he was treated for second-degree burns on his right arm and left shin and for an abrasion on his left shin. It was estimated that he would be out of work for about three weeks. He sustained no permanent disability.

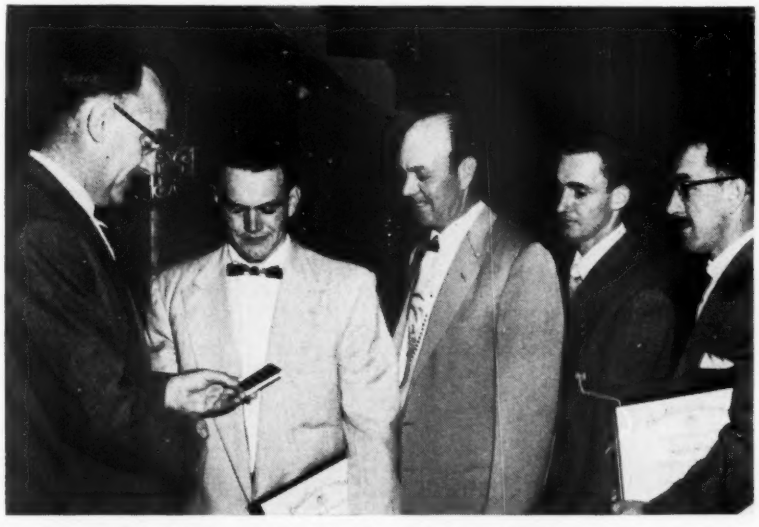
At the 1954 annual fall dinner-dance of the Dewey Avenue Operations Center at the Buffalo Trap & Field Club, Frederick J. Raps, General Superintendent of Transmission and Distribution for Niagara Mohawk, presented an EEI Medal to Robert Connor, an EEI Medal Miniature to Robert Weitz and a Certificate of Assistance to Alvin Leith. An account of the rescue appeared in the January-February, 1955, issue of the company house organ, *Niagara Mohawk News*.

WILLIAM E. DAVIS

Southern California Edison Company

Shortly after noon on May 26, 1954, in West Covina, Calif., a Southern California Edison Co. crew was in the process of setting a 40-ft pole directly under a single-phase 11-kv line which was to be relocated. The crew, under Heavy Crew Foreman Russell L. Kettle, consisted of Linemen William E. Davis and James L. Mertel. Groundmen Oak L. Pendleton, Herbert Webb and Thomas J. Carty, and Crew Assistant Curtis L. Watson.

Watson was driving the truck being used in the operation. Webb was standing on the truck bed and Pendleton, Davis, Mertel and Carty were working near the truck making preparations to raise the pole. Kettle, who was holding



(Left to right) Niagara Mohawk's General Superintendent of Transmission and Distribution Frederick J. Raps presents an EEI Medal to Robert Connor as Certificate winner Alvin Leith, victim Bernard Shocknesse, and Medal Miniature recipient Robert Weitz watch.

Pictured left to right following presentation of EEI Awards at Southern California Edison Co. are victim Russell Kettle, Certificate of Assistance winners C. L. Watson and T. J. Carty, Medal Miniature winners H. Webb, J. L. Mertel and O. L. Pendleton, EEI Medal recipient W. E. Davis, and W. E. Montgomery, Manager of Operations.

in his right hand the steel cable coming from the top of the raised boom on the truck, stood next to the hole where the pole was to be set and told Watson to move the truck forward about a foot and a half. As the truck moved, the top of the boom hit the 11-kv line and an arc flashed. Kettle received the shock through the cable in his right hand and, as the current ran through his body and out his feet, he was knocked to the ground. When he fell on his back on the ground, the cable fell across his stomach giving him a second shock. This time the current entered his stomach and went out through his feet and the back of his head.

Hearing the arc, Davis turned and, seeing Kettle's plight, grabbed a pike pole and knocked the cable off Kettle's stomach, releasing him from the circuit. Davis immediately turned the unconscious and not-breathing Kettle on his stomach and started back-pressure arm-lift artificial respiration about 15 seconds after Kettle was shocked. Pendleton had been in contact with the truck when it became energized and had been knocked to the ground. Unhurt, he jumped up and rushed over to help Davis. Watson backed the truck away from the line, de-energizing the truck, and ran to call a doctor. Webb, jumping off the truck after contact with the line had been broken, ran over and checked the victim's tongue while Carty, Pendleton and Watson covered him with a tarpaulin and rubber blankets.

After a minute or so of resuscitation, Davis, noticing that Kettle's ears were turning blue, had Webb relieve him and checked Kettle's heart beat. Feeling no beat, he hit Kettle on the back over the heart, causing Kettle's color to return. Davis then relieved Webb and worked for about ten minutes more. Pendleton relieved him and Davis and Mertel started to administer hip-lift resuscitation as Pendleton worked. In about 15 minutes after resuscitation was started Kettle began to breathe. Resuscitation, however, was continued for another eight minutes. During the resuscitation Carty and Watson kept Kettle's head in proper position and cleared his mouth as they counted the strokes of the men giving the resuscitation. The doctor, who had arrived on the scene about 12 minutes after the shock, examined Kettle during resuscitation and ordered the men to stop when Kettle was breathing naturally. Kettle was taken to the hospital in an ambulance and was treated for third-degree burns on his right hand, the back of his head, both feet and his stomach. No permanent disability was expected and the estimated time lost from work was 120 days.

At a ceremony on October 14, 1954, at Covina, Calif., an EEI Medal was presented by W. E. Montgomery, Manager of Operations, to William E. Davis for his successful resuscitation. For their help in the rescue, EEI Medal Miniatures were awarded Oak L. Pendleton, Herbert Webb and James L. Mertel and Certificates of Assistance were presented to Thomas J. Carty and Curtis L. Watson. The stories of the rescue and awards appeared in the *Covina Argus-Citizen* on October 21 and in the June and October issues of the company's house publication, *Safety News*.

JOSEPH VODRASKA

The Cleveland Electric Illuminating Company

At a customer transformer vault on Broadway Avenue, Cleveland, Ohio, on the morning of June 8, 1954, Splicer Grade I Robert Detzel, Trouble Splicer Louis Wagner, Line Foreman Joseph Vodraska and Driver Elmer Mastny were preparing to install temporary jumpers to transfer load from one incoming feeder cable to another. Detzel, wearing rubber gloves and leather protectors, was in the narrow space between a transformer and wire fence and was placing a rubber blanket over a cable-end pot-head. The cover of the pot-head had been removed to facilitate placement of the rubber blanket. His right side near the wire fence, he tied up one side of the blanket and reached over the pot-head to tie up the other side. His left elbow contacted the pot-head and an arc flashed as he received a 4340-v shock, the current entering his left elbow and going out his right arm near the shoulder and near the elbow and out his right hip.

Wagner, wearing rubber gloves and standing next to the transformer, immediately reached for Detzel, who was unconscious and not breathing, and pulled him free from contact. Wagner, Vodraska and Mastny then pulled him out of the vault and laid him on the floor, face down. Vodraska, only five or ten seconds after the shock, started back-pressure arm-lift artificial respiration and within three minutes Detzel started breathing heavily and erratically. Resuscitation was continued for another two or three minutes until Detzel was breathing naturally. The doctor had arrived before resuscitation was discontinued and accompanied Detzel to the hospital in an ambulance. At the hospital Detzel received treatment for burns on his left elbow, right arm and right hip. He sustained no permanent disability and it was estimated that he would be away from work for seven to eight weeks.

For their quick thinking and successful resuscitation, Joseph Vodraska was awarded the EEI Medal and Louis Wagner and Elmer Mastny Certificates of Assistance in November, 1954. H. T. Sealy, Vice President in Charge of Distribution, made the presentations. A story of the rescue and award appeared in the November issue of the company's house organ, *The Ceico Motor*.

GENE CUCURULLO

Public Service Company of New Hampshire

At about 9:00 a.m. on November 5, 1953, a Public Service Co. of New Hampshire line crew was installing new street-lighting equipment on a junction pole at the corner of Court and Main Streets in Keene, N. H. Foreman Forest Emery was grounding for Linemen Richard L. Nichols and Gene Cucurullo, who were on the pole where the three phase wires of a 4160-v wye circuit were dead-ended at a 90-degree angle.

Nichols, who was not wearing rubber gloves, was standing astride a horizontal guy wire on a set of six-pin buckarms and was belted around the top set of six-pin line crossarms. Preparing to change his position, he reached to place a wrench in his belt. His foot slipped and as he threw out his arms to regain his balance, his left hand contacted a bare tie wire on the energized tap from the line arm to the buckarm.

Cucurullo, belted to the pole below the buckarm braces and above the secondary racks, heard the arc and looked up to

see the unconscious and not-breathing Nichols slump in his belt. As Nichols started to topple over into the live tap, Cucurullo reached up, grasped his safety belt and pulled him away from the tap. With Nichols now in a horizontal position with his head and shoulders over Cucurullo's safety strap, his right thigh laying across the buckarm and his left leg still over the dead-end guy wire near the live tap, Cucurullo started Oesterreich Pole Top Resuscitation. Fearing that Nichols' left leg would contact the live tap, Cucurullo used his left hand to pull the leg away from the guy while pressing on Nichols' abdomen with his right hand.

After from three to five minutes of resuscitation, which had been started about thirty seconds after the shock, Nichols regained consciousness and started to breathe normally. A member of a tree-trimming crew, which was working nearby, climbed the pole with a safety line which Foreman Emery sent up. It was snapped to Nichols' D rings and, with the help of the tree-trimming crew and Emery, Nichols was lowered to the ground. He was then rushed to a hospital where he was treated for shock and burns on both thumbs and right middle finger. There was no permanent disability and Nichols returned to work after four days' absence.

For his quick and successful resuscitation, an EEI Medal was presented to Gene J. Cucurullo on December 8, 1954, at a general meeting of the company's Western Division. Frederick G. Harriman, New England Electric System Safety Manager and member of the EEI Accident Prevention Committee, made the presentation.

CHARLES R. WILLER

Iowa Electric Light and Power Company

Due to road grading about four miles northeast of Toledo, Iowa, a 6900-v single-phase rural line had to be transferred to a new pole. At approximately 8:30 a.m. on July 22, 1954, Journeyman Lineman Evan A. Thomas, atop a transformer pole, removed the clips holding armor rods around the conductor and untwisted about half the length of the rods, bending them away from the conductor. Then, presumably, he was going to cut off the untwisted portion of the rods before untwisting the remainder and, as he reached for his pliers, the rod ends flipped over and hit his arm above the rubber glove. The current entered his left forearm and went out his left foot at the climber stirrup, the shock rendering him unconscious and not breathing.

On another pole about 30 ft away, Apprentice Lineman Charles R. Willer turned upon hearing Thomas groan and, seeing what had happened, climbed down his pole and ran to Thomas' pole. On his way he saw the victim fall clear of the conductor and slump in his belt. In less than a minute after the shock occurred, Willer was in position under Thomas and started pole-top resuscitation. Two minutes later Thomas started to breathe. Willer stopped resuscitation and rigged a rope through Thomas' D rings, lowering him to the ground with the help of some men on the road-construction crew working nearby. The road workers and Willer put Thomas into a car and took him to a doctor's office in Toledo, where he was treated for third-degree burns on his left forearm, the arch and bottom of his left foot and a small burn on his lower left leg. It was estimated that he would be away from work for about three months. No permanent disability was anticipated.

At a Toledo restaurant on October 18, 1954, Sutherland Dows, President of the company, presented Charles R. Willer with the EEI Medal for his alertness, quick thinking and life-saving resuscitation. A story of the award and a review of the rescue appeared in Iowa Electric Light and Power's house organ, *The Front Line*, for October and in the October 21 issue of *The Toledo Chronicle*.

GEORGE D. WOOD

Texas Power & Light Company

Answering a fire alarm at 10:05 a.m. on August 5, 1954, the Richardson (Texas) Volunteer Fire Department rushed to a house fire on Holley Street in Vickery, Texas. The fire caused part of the house to fall in, letting some service wires carrying 120 v to a barn slacken so that they were within five feet of the ground. George D. Wood, Local Representative for the Texas Power & Light Co. and a member of the Richardson Fire Department, was standing about five feet away from a Vickery resident, George Anderson, who was helping the short-handed fire department by operating a booster hose. Standing in water, his clothing completely wet, Anderson contacted one of the slack service wires with the left side of his head. He was knocked to the ground unconscious and not breathing by the shock.

Wood immediately turned him on his stomach and started back-pressure arm-lift resuscitation. After about three minutes, Anderson started to regain consciousness and Wood, with help, moved him to a shady spot away from the fire and water and continued artificial respiration for a few minutes. Discovering that the main services to the house had fallen low enough for him to reach them, Wood left Anderson and cut the live wires at the house and at the pole with bolt cutters. He returned to Anderson, who had again lost consciousness and was not breathing, and applied artificial respiration for about five minutes more until the victim was able to sit up and talk. Ammonia inhalants were administered and Anderson was rushed via ambulance to his home where he was treated for shock by a doctor. Anderson was absent from his job for three days.

For his life-saving action, George D. Wood was presented the EEI Medal and the Texas Power & Light Co. President's Medal by C. J. Rutland, Manager of TP&L'S Safety Department, at a Rich-

G. J. Cucurullo (Left), Public Service Co. of New Hampshire, receives an EEI Medal from Safety Manager F. G. Harriman.

Victim Evan L. Thomas (Left) congratulates EEI Medal winner Charles R. Willer, Iowa Electric Light & Power Co.

Harold J. Sipps, who won an EEI Medal, is flanked by Certificate of Assistance winner Theodore L. Heller (Left) and Atlantic City Electric Co. President B. L. England.

ardson Rotary Club meeting on December 6, 1954. The story of the rescue and awards appeared in the January, 1955, issue of the company's house organ, *Texas Utility News*, the December 7 *Dallas Morning News* and the December 9 *Richardson Echo*.

HAROLD J. SIPPS

Atlantic City Electric Company

An Atlantic City Electric Co. line crew was on an overhead line job in the vicinity of Second and Mulberry Streets in Millville, N. J., on July 16, 1954. At about 4:00 p.m. Lineman Wilbert Stone climbed a pole carrying a 2400/4160-v wye circuit to remove the rubber protective equipment. Belted off between the crossarm braces and the secondary rack, he put on his rubber gloves and sleeves and removed the hood from the center phase, sending it down to Acting Supervisor Charles W. Robbins on the ground. Then, as later analysis showed, Stone evidently twisted around to his left to remove the hose from the outside primary conductors. As he did so his right forehead made contact with the primary conductors and his left knee hit the secondary conductors. As Stone was shocked into unconsciousness, his own reflex action released him from contact.

Robbins yelled to Apprentice Lineman Harold J. Sipps, who was working nearby, and Sipps ran to see what was the matter. He saw Stone slumped over and immediately climbed the pole and belted off about three feet below the secondary rack. With Stone free from contact, Sipps straightened him out, pulled his spurs out of the pole and started administering Oesterreich Pole Top Resuscitation in less than a minute after the shock. After about one minute Stone began to regain consciousness.

Lineman Theodore L. Heller, who was called from where he was working two blocks away by the truck driver, climbed the pole shortly after Sipps and helped position Stone for resuscitation. When Stone seemed to be out of difficulty, Heller called for a hand line, which he attached to Stone's D rings, and cut Stone's safety belt free from the pole with a knife. After Sipps had applied artificial respiration for three or four minutes, both he and Heller lowered Stone to the ground. Dr. Sol Rosen, whose office was nearby, had arrived on the scene while Sipps was applying pole-top resuscitation. He immediately examined Stone and sent him to the hospital for treatment of burns on the forehead and left knee. Stone was released from the hospital two hours later and lost no time from work.

Harold J. Sipps was awarded the EEI Medal and Theodore L. Heller a Certificate of Assistance by Atlantic City Electric Co. President B. L. England on November 4, 1954. Previously, on July 29, Charles M. Hagan, Executive Vice President of the company, presented both men with special Atlantic City Electric Co. citations for their heroic action. Stories of the awards and resuscitation appeared in the September and December issues of the company's house organ, *Electric Meter*, and in the July 30 *Atlantic City Press*.

M. E. SKINNER

Georgia Power Company

While playing in the yard outside her home in Wrightsville, Ga., shortly after noon on June 24, 1954, 2-year old Judy Fay Tanner grasped a poorly wired metal socket on an extension cord carrying 115 volts to a chicken brooder. Standing on wet ground with the socket in her left hand, she was severely shocked and was thrown to the ground unconscious and not breathing. Mrs. Tanner, Judy's mother, rushed to the child and pulled the socket from her hand, releasing Judy from contact.

Mrs. Tanner took Judy to the home of Dr. J. G. Brantley, who started administering Schafer Prone Pressure artificial resuscitation about 20 minutes after the shock occurred. After approximately five minutes, Judy started to breathe, but only with the help of the resuscitation. M. E. Skinner, Local Manager of the Georgia Power Co., in his home across the street from the doctor's house, was called on for help. Upon arrival at Dr. Brantley's home he took over with the resuscitation because Dr. Brantley was called on to attend a seriously ill baby. It was decided that Judy should be taken to a hospital and Skinner accompanied her, administering artificial respiration all the way. Resuscitation was applied for a total of about 30 minutes.

When they reached the hospital, Judy was breathing unassisted and was then treated for shock and third-degree burns on the thumb, forefinger and palm of her left hand. She sustained no permanent disability.

For saving Judy Fay Tanner's life, M. E. Skinner was presented the EEI Medal by C. W. Roberts, Georgia Power Co. Vice President, in Wrightsville, Ga., on December 2, 1954. A story of the resuscitation and award appeared in the December 2 *Macon News* and the December 3 *Macon Telegraph*.

JAMES E. VOLKERTS

California-Pacific Utilities Company

Near Johnstonville, Calif., on the afternoon of July 12, 1954, a California-Pacific Utilities Co. crew under the supervision of Foreman Samuel S. Thomas was replacing poles on a 33-kv line. The new pole, which had been picked up by the winch line of the truck's boom, was being reversed by Lineman James Volkerts and Thomas when the pole dipped. Volkerts felt a shock as the top of the pole contacted the line wire. Volkerts let go of the pole and turned to get a pike from the truck to free the pole, which was hanging on the line wire by the end of the crossarm bolt. Lineman Clarence Stampfli, who was operating the line truck, saw the contact between the pole and wire through the truck mirror and warned the crew.

As Volkerts turned toward the truck

M. E. Skinner (Left) was presented with EEI Medal by Georgia Power's Vice President C. W. Roberts.

Certificate of Assistance winner C. T. Stampfli (Left) watches as EEI Medal winner J. E. Volkerts is congratulated by California-Pacific Utilities President E. E. Albert.

Pictured following presentation are victim George Astleford, EEI Medal winner Albert W. Turner, IPSCo President George A. Neal, and District Manager E. H. Boicourt.

he saw Thomas standing at the rear of the truck with one elbow on the truck bed and his chin resting in his hands. He called to the foreman who did not respond. Realizing what was wrong, Volkerts shoved Thomas away from the truck, breaking contact between the truck and the ground. Unconscious and not breathing, Thomas fell down on the ground at the rear of the truck.

Volkerts immediately began the administration of Schafer Prone Method artificial respiration. Stampfli jumped from the truck and with Truck Driver Robert E. Wadsworth cleared the pole from the line using pikes. Wadsworth then called for a doctor and ambulance while Stampfli assisted Volkerts.

Although Volkerts began the resuscitation by administering Schafer Prone Method, he changed after about 15 seconds to back-pressure arm-lift method He was relieved by Stampfli, and the two men in relays applied artificial respiration for about 12 minutes before there was any sign of breathing, then continued the procedure for several additional minutes.

The victim was then removed to a hospital where he was treated for burns.

For their resuscitation actions, an EEI Medal was awarded to James E. Volkerts and a medal miniature to Clarence T. Stampfli. The awards were presented at a banquet held at the Hotel Mt. Lassen in Susanville, Calif., on Nov. 9, 1954. An account of the presentation appeared in the Nov. 18, 1954, issue of the Lassen *Advocate*.

ALBERT W. TURNER

Iowa Public Service Company

Late in the afternoon of August 12, 1954, in connection with a tree trimming job in Carnarvon, Iowa, District Electric Foreman George W. Astleford had climbed a pole, upon which was installed a 15-kva 7200-v transformer, to remove slack from a secondary wire. After completing the work, Astleford positioned himself on the pole to close the fuse cartridge and energize the transformer. He then decided to check the fuse sizes, so he put on his rubber gloves and removed the fuses. When he found them to be too large, he dropped them to District Maintenance Man Albert W. Turner and instructed him to replace the fuses with others of 5 amp. Turner then went to the rear of the truck to replace the fuses as instructed.

At this time, Astleford had located himself on the pole so that his head was approximately level with the crossarm holding the cutouts, and his safety belt was buckled above a foreign telephone arm. Because his hands were getting hot and sweaty, Astleford removed his rubber gloves. To place the gloves in their container it was necessary for Astleford to swing his body. In doing so his head contacted the energized top horns of the cutout. The resulting shock caused him to throw his arms outward and his right hand contacted the pole and neutral ground wire.

Turner heard a gasp, looked up and saw Astleford hanging unconscious and not breathing in his safety belt. As he put on his climbing tools, a lady ran from a nearby house and Turner instructed her to call a doctor. He then climbed the pole and began the administration of Oesterreich Pole Top artificial respiration. The neighbor returned from calling the doctor and, with another lady who had come to the accident scene, was instructed to get the ladder from the truck and place it against the pole under Turner. Turner then instructed one of the women to go to a garage several blocks away for additional help. By the time the men had arrived from the garage, Turner had revived the victim, who had first shown signs of breathing after three or four minutes of artificial respiration had been administered. Turner then directed the men as they assisted him in sliding Astleford down the pole. The doctor then arrived and administered first aid treatment to the victim before he was removed to a hospital.

Astleford's injuries consisted of burns on the top of the head and on the back of the right hand. He returned to work six days later.

An EEI Medal was presented to Albert W. Turner at a special ceremony on December 1, 1954, in Sioux City, Iowa, as a tribute to his successful resuscitation action. Iowa Public Service Co. President George A. Neal made the presentation. Stories of the accident, the ceremony and the award appeared in the August 19, 1954, and December 9, 1954, issues of the Lake City *Graphic;* the December 2, 1954, issue of the Sioux City *Journal-Tribune*, and the January, 1955, issue of the company magazine, *The Floodlight*.

EDWARD B. BLASKE

Community Public Service Company

Serviceman Second Class Buck B. Chapman, of the Community Public Service Co., was increasing the tap settings on a transformer bank in Emory, Texas, on the morning of June 29, 1954. The bank consisted of a 10-kva and a 25-kva, transformer supplying a four-wire secondary. When he was unable to close one of the cutouts, he removed the jumpers from the primary and closed it with his hand. He then connected the jumpers energizing the 10-kva transformer which in turn energized one leg of the secondary.

Then Chapman, in trying to unsnap his safety belt to move to a new position, contacted the energized secondary.

Local Manager Edward B. Blaske, who was standing about 10 ft from the pole, saw the contact and yelled at Chapman to let loose but the victim was unable to do so. While Blaske was putting on his tools, Chapman fell about 20 ft to the ground where he landed on his back.

Blaske immediately began the application of back-pressure arm-lift artificial respiration. Chapman began to breathe again in about two minutes but the treatment was continued for another minute after breathing had started again. Chapman was then removed by an ambulance, which Blaske had summoned, to a hospital where the victim was treated for concussion, a fractured left scapula, and second degree burns. He was able to return to his duties after 40 days of lost time.

Edward B. Blaske's resuscitation action was recognized by an EEI Medal which was presented to him at a dinner for the company's Northeast Texas employees held on December 10, 1954, at the Grayson Hotel in Sherman, Texas. Stories of the award and presentation appeared in the December 17, 1954, issue of the Lone Oak *News;* in the December 24, 1954, issue of the Rains County *Leader*, and in the January 13, 1955, issue of the Farmersville *Times*.

Electrical Equipment Committee Meeting

By C. L. Derrick, *Chairman*

THE Electrical Equipment Committee held its 65th meeting at the Deshler Hilton Hotel in Columbus, Ohio, on February 14 and 15, with an attendance of approximately 90 members and guests.

The program of the meeting consisted of the presentation of papers, reports, and discussions under the sponsorships of D. W. Taylor, Chairman of the System and Apparatus Troubles Division; R. M. Pennypacker, Chairman of the Operating and Maintenance Division; A. V. DeBeech, Chairman of the Foreign Practice Division; H. E. Deardorff, Chairman of the System Engineering Division; and S. C. Townsend, Chairman of the Apparatus and Design Division. In accordance with established procedure the committee devoted most of the first day to a closed session for informal discussion of apparatus troubles and other appropriate subjects.

H. J. Klumb presented a paper entitled "Rochester Gas and Electric Corp. Load Forcasting and Planning" as part of the program sponsored by the System Engineering Division. Rochester is the major concentration of population, commerce, and industry in the franchise area and accounts for 85 per cent of the total annual peak load.

The bulk of the load is supplied by two steam plants; an old plant called Station No. 3, located downtown, and the new Russell plant, located on Lake Ontario. This latter station has a capability of 192,000 kw from three units, and installation of a fourth unit of 85,000 kw capacity is planned for 1957. Supplementing the steam units and within the Rochester City limits, there are four run of river hydro plants with a total capability, under favorable conditions, of 49,000 kw.

The Rochester system has had a peak load growth rate since 1932 of 6.65 per cent per year and an energy growth rate of 6.67 per cent per year. The composition of the load is highly diversified and except for Eastman Kodak, each load is a small percentage of the total. This system does not experience the violent swings in load that appear in areas where large bulk loads are sensitive to business conditions, such as in steel or coal mining.

In 1950 an exhaustive study of the system and the future needs through 1960 was made, nine possible plans being considered before one was adopted. In late 1953, the plan selected was re-examined and six additional ones considered. The plan selected in 1950 was found to be the best and with the installation of the fourth unit at Russell in 1957, the ten-year 1950 plan will have been about completed. Future plans are not clear because of two major hydro developments in New York State: St. Lawrence and Niagara Redevelopment. The former is now under construction by the State of New York and the latter is not only uncertain as to accomplishment but as to who will be permitted to undertake it.

The second paper under sponsorship of R. G. Meyerand and presented as part of the program of the System Engineering Division described the development of Potomac Electric Power Co. system. This paper was prepared by D. C. Vaughan and delivered by L. M. Steere, both of the foregoing company. One of the unusual features in this area is that the Federal government accounts for about 40 per cent of the total employment and a large part of the total electric load.

Because of summer temperature and humidity conditions, air conditioning became common in Washington as early as 1940. As a result of this development, the system peak changed from winter to summer in 1941. Surprisingly, this did not affect the trend of the total system demand. Studies have shown that under average humidity conditions, the system kilowatthours and demand will change about 1 per cent per degree between 70 and 95 F. Another interesting factor is that the effect of sunlight in the summer seems to be decreasing and therefore it is no longer necessary to plan on extra capacity available for afternoon thunder storms.

The program of the Apparatus and Design Division consisted primarily of a paper sponsored by J. W. Bennett and presented by F. M. Porter describing the 330-kv station design and equipment on the American Gas and Electric System.

This company has presently either in operation or under construction 583 miles of 330-kv transmission lines. The general scheme of switching facilities and bus layout for 330 kv follows closely the methods developed for 132 kv. Lightning protection is a most important factor in design and construction of 330-kv stations. Overhead ground wires on the lines and stations are placed to minimize, if not entirely prevent, direct strokes to conductors. Such lightning disturbances as do reach lines and follow through to equipment at terminals are expected to be held to safe limits by lightning arresters.

Mr. Porter pointed out that when designing a system for operation at these extremely high voltages the economics of the situation must be studied very carefully because of the high cost of individual components. He said every effort was made to obtain reliable equipment capable of meeting all service requirements but not having in it anything extra over and above these requirements. He added that economics was a governing factor not only in the choice of this voltage but in the carrying out of design and application of equipment used.

J. H. Vivian discussed briefly the historical development of high-voltage transmission systems in California.

J. S. Brown presented a brief report on the transformer noise problem. He said he had contacted the larger manufacturers of transformers and they were each working on an individual solution to the problem.

The program of the Operation and Maintenance Division was highlighted by three papers, under sponsorship of R. J. Salsbury, describing operating practice in loading transformers. These three papers described the interpretation and practice being followed by three widely separated companies in regard to the Transformer Loading Guide as related to substation transformers.

H. T. Sutcliffe informed the committee that Pacific Gas and Electric Co. is applying a local modification of ASA Standard No. C-57.32 to the loading of distribution substation transformers and regulators. This modified concept was necessary because of the large size and varied temperature

conditions on the PG&E system. Essentially the year was divided into two six month warm and cool seasons and the area into interior and coastal regions as a basis for the subsequent loading tables developed. Operation of the new guide is restricted to equipment on which clearance has been received from the manufacturer. Transmission stations to date have been excluded from application of the guide. Mr. Sutcliffe said it appeared a worthwhile saving in invested capital and in consequent carrying charges should result but no definite figures were available at this time because the plan was only adopted this January.

The second paper on the same subject was prepared by J. B. Killoran of Consolidated Edison Co. of New York, Inc., and was read by C. S. Murray, the title of this paper being "Selection of Power Transformers for Use in Metropolitan Substations." Mr. Murray described in detail the procedure used by his company in selecting and loading substation transformers and cited several specific examples. Generally, in the larger sizes dual rating units are selected and these are loaded in accordance with the recommendations of ASA C-57.32.

The final paper of this symposium was presented by A. F. Phillips of Duquesne Light Co. and was entitled "Thermal Rating of Substations." Mr. Phillips reported his company has saved about $11 million in capital investment since 1939 when they started to base transformer operating ratings on thermal capability rather than on nameplate values. Nameplate ratings are based on fixed conditions—a continuous load and an average ambient air temperature of 30 C. In actual service, operating conditions are generally more favorable, thus permitting increased loading.

S. C. Hoover presented a brief report on the recent meeting of the EEI Joint Subcommittee on Fire Protection.

The program of the Foreign Practice Division was presented by A. V. DeBeech and R. J. Hirsch. The latter described briefly some recent developments in Canada including some information on failure of the transmission lines to the Kitimat Development of the Aluminum Co. of Canada caused by severe snow slides. Mr. DeBeech discussed some recent developments in Europe and South America.

Transmission and Distribution Committee Meeting

By J. W. Anderson, *Chairman*

THE winter meeting of the Transmission and Distribution Committee was held on February 10 and 11 at the Shoreham Hotel in Washington, D. C., with 190 members and guests in attendance.

Underground Group

The meeting opened with the Underground Group session, sponsored by H. E. Cody.

C. W. Leihy presented a Swedish State Power Board film depicting installation of the 60-mile, 100-kv, direct-current submarine cable laid on the sea bottom to supply the Island of Gotland from the Swedish mainland. A supplementary film showed location and repair of a fault which occurred 20 miles at sea at a 400-ft depth.

W. J. Witte presented results of a survey of sectionalizing and protective devices used in conventional underground radial and loop circuits. Manual oil switches and oil fuse cutouts are by far the most popular devices and it is generally accepted practice to use both to pick up or drop load. The survey covered many other details of operating, inspection, and maintenance practices which tend to vary widely among companies.

F. L. Woods and C. P. Xenis described a new low-height network transformer designed for the Consolidated Edison Co. to alleviate severe tank corrosion problems. The lower height and use of a novel three-point wall suspension provide a completely clear 12-in. space under the tank which keeps it free from contact with accumulated dirt for much longer periods and facilitates cleaning and maintenance. Two large panel-type radiators on each side of the tank instead of conventional cooling tubes further facilitate cleaning and repainting the unit in place.

C. P. Xenis also demonstrated a developmental model of a new device designed to speed up duct rodding operations. The device consists of a completely sealed, eccentrically loaded, high-speed electric motor with special wire brushes slightly larger than duct on each end of the shaft. The wobble of the motor combined with the reaction of the brushes on the duct causes it to spiral its way along the duct at speeds up to about 3 feet per second.

Joint Session

A joint session with the Accident Prevention Committee was held on the afternoon of the first day.

Accident Prevention Committee spokesmen discussed the three leading causes of fatalities in the industry. E. A. Hagenbuch noted the value of driver training programs in reducing motor vehicle accidents. J. C. Egg emphasized how good engineering design and maintenance can minimize conditions contributing to falls. C. P. Shirey stressed that grounds are one half of the circuit and that covering or isolating live conductors is not always enough to prevent accidental contact. C. A. Coutts pointed out that most electric shock and burn fatalities result either from failure to use protective devices provided or from failure to use them in the proper manner. All stressed that safe performance is a responsibility of the line organization and that safety personnel can serve only in a staff advisory capacity.

H. E. Brown, H. E. Cody, W. R. Doar and W. J. Witte discussed these subjects on behalf of the Transmission and Distribution Committee. They concurred in the value of lineman and driver training programs. While they also agreed that careful engineering design can reduce hazards they pointed out that economic and other practical considerations, particularly in congested areas, prevent their elimination. Thus the operating forces must continue to look to the safety staff to provide information on safety techniques and the materials to implement them and to devise specific training program techniques which

will instill job discipline in the men and reduce the likelihood of human failure which is responsible for most accidents.

Standards and Specifications Group

Progress of the Standards and Specifications Group, sponsored by W. L. Vest, was reviewed by subcommittee chairmen.

M. H. Powell reported that a revision of TD-5, "Specifications for Eyenuts and Eyelets," is approved and ready for printing. Balloting on the proposed revision of specifications for steel insulator pins indicated that further modifications are required. The proposed revision of specifications for steel crossarm braces has been modified and resubmitted for ballot. A proposed revision of specifications for eye bolts and a further modification of the proposed revision of specifications for strand eye anchor rods are about ready for ballot. Preparation of proposed new specifications for expansion shields for galvanized lag screws and machine bolts, insulated clevises and wireholders and reexamination of the existing specifications for guy thimbles are progressing. A joint committee is being reconstituted to consider expanding existing EEI-NEMA Specifications for Standard Mounting Brackets for Distribution Cutouts and Distribution Lightning Arresters to include an additional heavy duty bracket suitable for use on larger crossarms.

F. A. Ashbaugh stated that completion of proposed new specifications for Douglas fir heavy duty crossarms and Douglas fir braces is awaiting issue of revised West Coast Lumberman's Association Grading Rules which are referred to in the specifications. Extensive review of experience with application of TD-100, "Specifications for Full-Length, Non-Pressure, Preservative Treatments of Poles" indicates that there may be sufficient correlation between penetration and retention to delete the requirement for the latter test. The Timber Products Subcommittee also is investigating simpler means of determining moisture content of southern pine crossarms, methods of pole top treatment and standing pole inspection practices.

F. E. Moesta reported that work on proposed EEI-NEMA street lighting equipment standards for steel luminaire supports, film cutouts, high voltage controllers, insulator head and reflector interchangeability, and a revision of existing standards for metal head and reflector interchangeability is nearing completion. Other standardization projects under study include multiple sockets, photo sensitive devices, and dimensional features of series transformers and ballasts.

F. C. Marschner reported that proposed specifications for solder-sweated, split, tinned-copper connectors are about ready for ballot. Work on development of specifications for compression type connectors is continuing.

E. A. Rothfus presented results of a survey of the use of reclosers. The ratio of single-phase to three-phase reclosers is 9 to 1 in substations and 18 to 1 on distribution lines. Application is more prevalent on higher voltage distribution circuits probably due to the lack of current ratings large enough for many of the lower voltage circuits. The most popular operating sequence is two instantaneous followed by two time delay operations. The survey also covered many other details of application, operating experience, and inspection and maintenance practices.

General Engineering Group

The General Engineering Group, sponsored by D. Burns, opened with several subcommittee reports.

R. W. Baker presented results of a survey indicating that television interference is not a major problem in either high or low field strength areas. Investigation of complaints reveal only a small portion to be due to power systems.

H. W. Grate reported that a survey of troubles due to outages and voltage dips of short duration indicates that the largest source of complaints is from the effects of momentary disturbances on motor undervoltage releases and from loss of production rather than damage to equipment. Further study of the problem is planned.

In reviewing radio and carrier matters, W. C. Phillips noted recent FCC proposals regarding rules for operation of utility radio systems during air raid alerts and for splitting present channels in the 30-50 and 152-162 mc mobile radio bands to provide a greater number of channels.

W. M. Penney presented a discussion of distribution engineers' problems with room air conditioners. This paper appeared on page 37 of the February issue of the BULLETIN.

B. Brady reviewed activities of the ARI-EEI-NEMA Joint Committee on Air Conditioning and Refrigerating Equipment and described load tests on individual distribution transformers serving purely residential loads which included air conditioning. Power factors averaged over 95 per cent during winter months but dropped into the 70's through the summer.

G. S. Jones, Jr., Managing Director of the Air Conditioning and Refrigeration Institute, reported that preliminary data on 1955 room air conditioner production indicates power factor improvement averaging several percent and that the minimum values specified in the ARI-EEI-NEMA Interim Report on Power Factor of Room Air Conditioners will be met in 1956 production. Improvement is being accelerated by new National Electrical Code running current limitations which already have resulted in several ½-hp 1955 models with running currents of 7½ amperes and power factors of about 90 per cent.

G. E. Whitwell, Vice President in Charge of Sales of Philadelphia Electric Co., discussed the tremendous electrical load growth which can be anticipated in the next 15 years. This paper appears on page 73 of this issue of the BULLETIN.

T. C. Duncan reported that the Higher Secondary Voltage Subcommittee plans to present a preliminary report of its recommendations for consideration at the next meeting.

Overhead Group

The Overhead Group, sponsored by M. H. Pratt, covered a variety of subjects.

R. N. Coe reported that a tentative program for the second phase of research on aluminum conductor fittings providing for financial participation by conductor and connector manufacturers has been formulated.

L. J. Jacobi outlined progress of the ASTM wood pole testing program to more accurately determine the strength of the five most commonly used species of poles.

(*Continued on page* 94)

Electrical Modernization in New York City

(*Continued from page* 84)

of course, the apartment resident who will use the electric service. Their principal interest varies and wiring promotion activities must be suited to the basic concern of the individual group.

Public Demand Necessary

It is our opinion that adequate wiring will be installed in apartments as a general practice only if the public demands it. There is not sufficient incentive for builders to provide it, otherwise. Before it will be demanded by the public, we will have to convince them that it is a genuine benefit and worth its added cost; that is, rental. Unfortunately, this is not as easy to sell to the apartment renter as to the private house owner.

Telling the Story

So many people in our territory must be told the wiring story again and again that all available media are used to some extent. Our use of different tools has varied with circumstances, but has included direct mailing of material published by us and material of others, better wiring as a part of our television programs, trade journal and newspaper advertising and we have cooperated to the limit with feature writers for newspapers, and magazines so that there has been a great deal of editorial copy on wiring in the last year or so. Also, we use bus and car card advertising, show room and show window working displays, and exhibit at trade and club conventions. These are good, but obviously the most effective presentation is as wholly a personal approach as possible and a group meeting is the next best method. We started our wiring promotion with a series of meetings with trade groups where we presented a "live" show whereby life in a New York apartment with inadequate wiring was portrayed by the actors. A single troupe or cast and large stage sets are not conducive to reaching large numbers of people in a reasonably short time. Although our "live" show was presented to a total audience of 7,500 persons, it was evident that a presentation of greater portability was necessary. Our movie, "The Magic Link," was the outcome. We have shown the movie hundreds of times since it became available last July 1, and we will continue to show it whenever we can arrange for a suitable audience. A movie showing is supplemented by a short talk on adequate wiring slanted for maximum effectiveness to the particular audience.

A Correctible Situation

It has been established that the apartment wiring situation is correctible. Although evidence of progress is all around us, of course we should like to have seen more of it. To this end changes in our operations and methods will be made whenever it seems desirable to do so and the only certain thing about our plan is that we shall combat inadequate wiring with undiminished vigor.

Young Men's Utility Conference Program Announced by Indiana Electric Association

MORE than 200 young men from seven Indiana electric utilities will hold their 15th Annual Young Men's Utility Conference in Indianapolis, Ind., on April 6-7.

This conference — unique in the electric utility industry — is completely planned by participating utility employees under 35 years of age, with an assist from the parent Indiana Electric Association, which sponsors the conference.

The young men list three conference objectives: to instill in their minds the traditions of public service for which utilities are noted, to increase their knowledge of utility operations in general and of each person's job in particular, and to let them express their views.

H. T. Pritchard, President, Indianapolis Power & Light Co., will extend a welcome from the host company at the first session, when there will also be sponsor's remarks from J. C. Hill, Fort Wayne Division Manager, Indiana & Michigan Electric Co. Topics and speakers at this session will be "Electric Space Heating — Practical Utilization in This Area" by J. H. K. Shannahan, Commercial Manager, Indiana & Michigan Electric Co.; "The Accident Machine" by Ralph Young, Safety Engineer, Public Service Co. of Indiana, Inc.; "Electric Power From the Atom" by R. J. Kryter, Consulting Engineer; and "Red Sales in the Sunset" by Donald Bruce, News Commentator, Radio Station WIRE. A banquet is scheduled to close the first day's activities.

Both the morning and afternoon sessions on April 7 will have as their topic "Electrical Industry in 1964" and will be conducted by personnel from the Apparatus Marketing Division of General Electric Co. Participating in the presentation will be S. J. Tombaugh, Indianapolis Office Manager, and his associates. A luncheon session also will be held that day.

All conference sessions will be held in Indianapolis Power & Light Co.'s employee recreation center.

Accounting Conference

(*Continued from page* 72)

have an exhibit booth for its Customer Relations Training by Film and Manual project, which will enable company representatives to become acquainted with this training material, ask questions and have a visual demonstration, if they so desire. An endeavor will also be made to exchange information on how various companies are utilizing this training material to help others find out how to better utilize this package in their own companies. This project will be highlighted also on the general session program on Monday afternoon.

The usual opportunity to mingle socially will be afforded Tuesday evening, April 26, at the conference dinner, which will be topped off with brief musical entertainment. For the ladies and wives attending the conference, entertainment and well-planned arrangements are being provided by a Ladies' Day program on Tuesday, April 26.

Power Equipment to Get Atomic Test

(*Continued from page* 79)

pole transformers and other equipment. Power lines will run from the poles to some of the houses being tested by the FCDA. Each system will be in working order and will be tested for operation before and after the blast. Parts of the system will be energized during the detonation. Results of the test will be studied and analyzed by a committee of engineering experts.

T & D Committee Meeting

(*Continued from page* 92)

B. Brady described a new method of testing the ground line strength of standing poles. A small hydraulic jack with attached pressure gauge and short pike pole produce a transverse force on the pole while the resulting elongation of pole fibers at the ground line are measured by an extensometer with indicating dial gauge.

Symposium on Major Storms

A feature of the program was a symposium on minimizing and meeting the effects of major storms.

E. C. Rue of Boston Edison Co. and J. A. English of Philadelphia Electric Co. described their respective experiences with the recent hurricanes and details of how these experiences have altered restoration planning.

C. F. Monnier then led a panel discussion of specific topics associated with restoration. G. E. Dean, W. R. Doar, J. A. English, R. M. Grogan, R. Hicock, H. L. Livingood, J. J. O'Brien, E. C. Rue, J. A. Siegfried, and W. J. Witte participated. Topics included mutual aid plans, moving crews from outside areas, personnel problems with outside aid, engineering design and operating practices, reporting restoration progress to customers, training and use of non-operating personnel, and local organization. It was concluded that the extensive area affected by each of the recent hurricanes emphasizes the need for organizing mutual aid plans on a much broader geographic scale than heretofore.

Missouri Town, Planned Progress Program Winner, Celebrates Year's Work Completion

THE people of Leadwood, a small unincorporated town of 1,400 located in the Lead Belt area of Missouri, recently celebrated completion of a year's hard work for civic progress as carried out by citizens of the community working under the Planned Progress Program.

Leadwood was named first place winner in the adult phase of the Planned Progress Program for community development which is sponsored by Union Electric Co. of Missouri. More than 750 persons attended the victory banquet held in the Leadwood High School at which time the town's Planned Progress adult council received a cash award of $1,000 from Union Electric to be used for further civic improvement.

Dudley Sanford, Executive Vice President of Union Electric, in making the presentation pointed out that the Planned Progress Program, in its simplest terms, is a way of getting things done. He noted that it is the essence of practicality at every step —from critical analysis and appraisal of a town's needs and resources by the youth of the community to the selection of attainable objectives and the actual work of accomplishing the objectives with the help of both adults and the youth of the entire community.

Mr. Sanford said, "Planned Progress towns have built new sidewalks, paved streets, renumbered houses, built parks, improved schools, remodeled public buildings, started supervised recreation programs for children, put up new street signs, provided recreation centers for teen-agers, improved water systems, cleaned up unsightly vacant lots, organized fire departments and accomplished dozens of other things, large and small, that needed doing."

Mrs. Blanche Caviness, chairman of the adult council, in accepting the award listed some of the community's improvement projects accomplished during 1954. They included raising more than $9,000 which was used to landscape the city park, as well as for building roads and permanent equipment in the park; raising more than $17,000 to purchase equipment for the Leadwood Volunteer Fire Department, and a vast amount of work on the physical plants of several churches serving the area.

William Schmidt, Jr.

WILLIAM SCHMIDT, JR., Chairman of the Board, Consolidated Gas Electric Light and Power Co. of Baltimore, died in Clearwater, Fla., on February 18 at the age of 72. Mr. Schmidt was a member of the Edison Electric Institute Advisory Committee.

He was born in September, 1882, in Baltimore, Md., and began his business career in 1898 as a clerk for the Edison Illuminating Co., a predecessor company of Consolidated Gas Electric Light and Power Co. of Baltimore. In 1910 he became secretary of the company and was made a director in 1914 and assistant treasurer in 1915. In 1926 he was named treasurer, becoming vice president 12 years later. He was elected executive vice president in 1942 and president in 1946. In December, 1946, he became chairman of the board, carrying out the responsibilities of that office in addition to presidential duties. He declined re-election to the presidency of the company in 1950 but accepted re-election to the board chairmanship.

Mr. Schmidt, who was educated in Baltimore schools, was a member of the Baltimore Bar, a director and member of the Executive and Trust Committees of Fidelity-Baltimore National Bank & Trust Co., a director of both the Eutaw Savings Bank and The Maryland Casualty Co., a director and member of the Baltimore Association of Commerce Executive Committee, and a past vice president of the Association of Edison Illuminating Companies. He was also a member of various civic and social groups and had a distinguished record as a Mason.

Mr. Schmidt is survived by his widow and sister.

Personals

Raymond D. Maxson, Engineering and Operating Vice President of Commonwealth Edison Co., has been elected Senior Vice President of the company and will relinquish his duties in operating and engineering activities to assist in the administration of the duties of the President. He will also have special assignments from the Chairman and Executive Vice President of the company.

At the same time **J. Harris Ward**, Vice President, will relinquish duties connected with commercial matters and will assist in the administration of the duties of the Executive Vice President. **Murray Joslin**, Financial Vice President, has been named to succeed Mr. Maxson and **Gordon R. Corey**, Vice President and Comptroller, has succeeded Mr. Joslin. **Thomas G. Ayers**, Industrial Relations Vice President, has become Vice President in Charge of Commercial Activities and **Carl E. Parker**, Assistant Vice President, has been appointed Manager of Industrial Relations and will be in charge of the Industrial Relations Department.

W. J. Ready, Controller for South Carolina Electric & Gas Co., has been named Vice President of the company and of South Carolina Natural Gas Co. He will continue his duties as controller, the position he has held since 1943.

Mr. Ready, a CPA, joined a SCEGCO predecessor company in 1925 and served in various accounting capacities before becoming controller. He became a member of the board of directors in 1952. He is a member and past president of the South Carolina Association of Certified Public Accountants, a member of American Institute of Accountants and has served as chairman of the Accounting Section of the Southeastern Electric Exchange.

At Mississippi Power & Light Co., **Alex Rogers** has been elected Comptroller and Secretary; **W. I. Hill**, Treasurer; and **C. Lamar Stephenson**, Assistant Secretary.

Mr. Rogers, employed by Mississippi Power & Light for 20 years, started as a rate clerk, later becoming head of the Rate Department and executive assistant, the position he left to serve in the Navy in World War II. Returning from service, he served as assistant division manager and district manager of the Central Division from 1946 to 1951. Prior to employment with the company, he attended Mississippi College, Mississippi State College and the University of Iowa, where he received a B.S. degree.

Mr. Hill had been acting secretary-treasurer until his recent assignment. He joined MP&L in 1925 as a clerk in the Jackson, Miss., office and subsequently served as traveling auditor, general office accountant, auditor, assistant treasurer and assistant secretary. He received his education at Meridian College and completed accounting courses with LaSalle Extension University and International Accountants Society.

Mr. Stephenson, Treasury Assistant since 1953, joined the company in 1949 as an accounting clerk. He next became traveling auditor, in which capacity he served until leaving to enter military service in 1950. He returned to the company in 1952 and assumed his previous position a year later. He is a graduate of Mississippi State College with a B.S. degree and has completed a CPA coaching course at LaSalle Extension University.

Charles J. Wick, Vice President of Niagara Mohawk Power Corp., has assumed new executive duties as successor to Vice President **Albert T. O'Neill**, who has retired. Mr. Wick, a graduate of Canisius College and the University of Buffalo Law School, left a Buffalo, N. Y., law firm in 1953 to join Niagara Mohawk as vice president. Mr. O'Neill's retirement brings to a close 45 years of association with companies of the Niagara Mohawk System.

Robert B. MacGuinness has retired from Vice Presidential duties at Central Hudson Gas & Electric Corp., but will continue to serve the company as consultant.

Mr. MacGuinness began his utility career as an office boy with Westchester Lighting Co. in 1902 and later worked in various engineering and electric operations for Russell, Burdsall and Ward Bolt and Nut Co., Northern New York Utilities, and Northern Indiana Gas and Electric Co. In 1923 he joined Central Hudson as district superintendent in the Poughkeepsie Operating Department. In 1926 he was appointed operating manager and in 1932 was elected to the Board of Directors. He became vice president in charge of operations in 1939 and relinquished that position in 1953 in order to undertake special assignments and direct completion of Unit No. 2 at Danskammer Point Steam Station.

C. H. Leatham has retired as Executive Vice President of Monongahela Power Co., ending a 46-year career in the electric utility field. Mr. Leatham joined Monongahela Power in 1935 and assumed the executive vice presidency in 1950.

At The Connecticut Power Co., **H. Warren Lawrence** has been named General Manager of the company and has been succeeded as General Superintendent of Electric Operations by **Jack P. Lewis**, Director of Engineering. Mr. Lewis will continue to be responsible for general engineering.

A graduate of both Ohio State University and Harvard School of Business Administration, Mr. Lawrence joined Connecticut Power in 1935 after having served with the United Electric Light Co. of Springfield, Mass., for four years. Prior to assuming his previous position he was assistant manager of the company's Middletown Division, manager of the Farmington Division and assistant to the executive vice president.

Mr. Lewis has been director of engineering since 1947, having formerly served the company at New London and as assistant to the manager of the Stamford Division. He was graduated from Rensselaer Polytechnic Institute in 1930 as an electrical engineer and received a doctor of electrical engineering degree from Rensselaer in 1933. He joined the company while still a student and upon completion of his college train-

ing returned to company service. In 1940 he was put in charge of electrical engineering in the Stamford Division, becoming division engineer in 1942 and assistant to the manager in 1943.

Robert B. Donworth, Manager of Duquesne Light Co.'s Atomic Power Development Department, has been placed in charge of the company's Engineering and Construction Department. With Duquesne Light since 1930, Mr. Donworth began an 11-month course in the reactor school at the Oak Ridge National Laboratory of the U. S. in 1952 and assumed his previous position with the company in 1953 at the conclusion of the course. He has supervised atomic studies of Duquesne Light and has participated in the company's work in the construction of the nation's first full-scale atomic electric power plant at Shippingport, Pa. He is a member of ASME, the Engineering Society of Western Pennsylvania and the National District Heating Association.

Melville W. Ghen, Superintendent of Operations in the Downtown District of Duquesne Light Co.'s Transmission and Distribution Department, has been appointed Superintendent of the newly created Line Engineering Section of the Transmission and Distribution Department. The new section is a combination of the department's Engineering and Construction Sections.

Mr. Ghen joined Duquesne Light in 1921 as a material man. He was later made supervisor of construction in the Underground Division and in 1927 assumed his previous position. Mr. Ghen was a member of the EEI Transmission and Distribution Committee from 1943 to 1954 and has been engaged in EEI-NEMA joint committee work on transformers. He is also a member of the Executive Committee of the AIEE Pittsburgh Section.

Named to succeed Mr. Ghen as Superintendent of Operations of the Downtown District is **William P. Cook,** District Engineer for Duquesne Light since 1952. Mr. Cook has been active in several electric industry organizations and is presently associate editor of the *Underground Systems Reference Book,* an EEI publication currently under revision.

At Oklahoma Gas and Electric Co., resulting from the retirement of **Bernard J. Braheney,** Central Division Manager, three employees have been moved into higher managerial posts. **Emil Wyatt,** District Manager at Ada, has moved to Sapulpa as Central Division Manager with supervision of the company's operation in a 24-town area. **Garland P. Middaugh,** Manager at Alva, has succeeded Mr. Wyatt at Ada and **Norborne C. Auld,** Western Division Operating Superintendent, has moved to Alva as district manager.

Assigned to three newly created positions in the Sales Department of Northern States Power Co. (Minn.) are three veteran NSP employees. **B. W. Hanson,** Sales Manager of the Fargo Division, has become Manager of Residential Sales. **A. A. Aronson,** Supervisor of Lighting Sales at the St. Paul Division, has been made Manager of Trade Cooperation. **John Newhouse,** Supervisor of the company's industrial sales, has become Manager of Commercial Sales.

N. C. Thompson, Supervisor of Materials, Alabama Power Co., has been made Superintendent of Stores, succeeding the late **J. B. Thomas.** Mr. Thompson, with the company since 1928, has served as office engineer in Birmingham and Montgomery, district engineer of the Southern Division, district superintendent at Jasper and senior distribution engineer in the company's general office.

Announcement of the following personnel changes at The Cincinnati Gas & Electric Co. has been made.

B. J. Yeager, Superintendent of the Walter C. Beckjord Station, has been made Assistant Manager of the Electric Production Department. **Frank P. Corrigan,** Assistant Superintendent of the Beckjord Station, has succeeded Mr. Yeager as Superintendent. **William V. Van Gilse,** Plant Engineer at the Beckjord Station, has succeeded Mr. Corrigan as Assistant Superintendent. **Nicholas J. Krebs,** Associate Engineer at the Beckjord Station, has been made Plant Engineer to succeed Mr. Van Gilse.

Mr. Yeager started with the company in 1930 as a University of Cincinnati engineering co-op at the West End Station. He had been named to his former position in 1951. Mr. Corrigan has been with the company since 1914, when he was employed as engineer at the old Plum Street Station. He also had received his previous assignment in 1951. Mr. Van Gilse began employment with the company in 1946 as a junior engineer at the West End Station. He became plant engineer at the Beckjord Station in 1951. Mr. Krebs started with Cincinnati Gas & Electric in 1934 while a co-op student at the Ohio Mechanics Institute and became a full-time employee in 1936. Prior to his previous position, he served as maintenance foreman.

T. Roland Height, Assistant Superintendent of Jersey Central Power & Light Co.'s Central Division, has been named successor to the late **J. Albert Marks** as Superintendent of the Central Division. Mr. Height has been succeeded by **Corwin E. Dolamore.**

Mr. Height joined JCP&L in Lakewood, N. J., as district clerk in 1944 and became buildings supervisor in Asbury Park in 1945. In 1948 he returned to Lakewood as assistant engineeer, becoming division engineer in 1949 and assistant division superintendent in 1953.

Also at JCP&L, **Herbert W. Brenn,** Assistant District Superintendent at Summit, N. J., was made District Superintendent to succeed retired **James Traynor,** who had served in that position since 1928. Mr. Traynor's 41-year career in the public utility field was recognized by the company when it named the Summit Substation in his honor on the eve of his retirement.

Mr. Traynor started with the Commonwealth Electric Co. in 1913 after four years in the Navy and served successively as groundhand, lineman, service foreman and line truck foreman. Mr. Brenn joined the company in 1930 as a distribution clerk in Summit. He became assistant to the district engineer in 1936, district engineer in 1943 and assistant district superintendent in 1954.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

HAROLD QUINTON, *President*.....Southern California Edison Co., Los Angeles, Calif.
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H. S. BENNION, *Vice President and Managing Director*....420 Lexington Avenue, New York, N. Y.
H. S. SUTTON, *Treasurer*.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
A. B. MORGAN, *Secretary and Assistant Managing Director*..420 Lexington Avenue, New York, N. Y.

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(Terms Expiring 1955)

A. D. BARNEY.....The Hartford Electric Light Co., Hartford, Conn.
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ALLEN S. KING.....Northern States Power Co., Minneapolis, Minn.
EARLE J. MACHOLD.....Niagara Mohawk Power Corp., Syracuse, N. Y.
PAUL B. MCKEE.....Pacific Power & Light Co., Portland, Ore.
S. C. MCMEEKIN.....South Carolina Electric & Gas Co., Columbia, S. C.
GROVER C. NEFF.....Wisconsin Power and Light Co., Madison, Wis.
P. H. POWERS.....West Penn Power Co., Pittsburgh, Pa.
R. G. RINCLIFFE.....Philadelphia Electric Co., Philadelphia, Pa.
WALTER H. SAMMIS.....Ohio Edison Co., Akron, Ohio
C. V. SORENSON.....Indiana & Michigan Electric Co., Ft. Wayne, Ind.
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J. B. THOMAS.....Texas Electric Service Co., Ft. Worth, Tex.
ALLEN VAN WYCK.....Illinois Power Co., Decatur, Ill.

(Terms Expiring 1956)

D. E. ACKERS.....The Kansas Power and Light Co., Topeka, Kan.
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B. L. ENGLAND.....Atlantic City Electric Co., Atlantic City, N. J.
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P. H. MCCANCE.....Duquesne Light Co., Pittsburgh, Pa.
R. E. MOODY.....Union Electric Co. of Missouri, St. Louis, Mo.
HARRY B. MUNSELL.....Kansas City Power & Light Co., Kansas City, Mo.
O. TITUS.....Pennsylvania Electric Co., Johnstown, Pa.
W. O. TURNER.....Louisiana Power & Light Co., New Orleans, La.
G. W. VAN DERZEE.....Wisconsin Electric Power Co., Milwaukee, Wis.
WILLIAM WEBSTER.....New England Electric System, Boston, Mass.
FRANK M. WILKES.....Southwestern Gas and Electric Co., Shreveport, La.

(Terms Expiring 1957)

R. P. BRIGGS.....Consumers Power Co., Jackson, Mich.
W. J. CLAPP.....Florida Power Corp., St. Petersburg, Fla.
J. E. CORETTE.....The Montana Power Co., Butte, Mont.
C. P. CRANE.....Consolidated Gas Electric Light and Power Co. of Baltimore, Baltimore, Md.
A. S. CUMMINS.....The California Oregon Power Co., Medford, Ore.
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E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
JOHN W. EVERS.....Commonwealth Edison Co., Chicago, Ill.
C. E. IDE.....The Toledo Edison Co., Toledo, Ohio
S. R. KNAPP.....The Connecticut Light & Power Co., Berlin, Conn.
C. B. MCMANUS.....The Southern Co., Inc., Atlanta, Ga.
R. S. NELSON.....Gulf States Utilities Co., Beaumont, Texas
W. A. PARISH.....Houston Lighting & Power Co., Houston, Texas
HAROLD QUINTON.....Southern California Edison Co., Los Angeles, Calif.
L. V. SUTTON.....Carolina Power & Light Co., Raleigh, N. C.

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EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

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CURTIS E. CALDER.....Electric Bond and Share Co., New York, N. Y.
EDGAR H. DIXON.....Middle South Utilities, Inc., New York, N. Y.
PHILIP A. FLEGER...Duquesne Light Co., Pittsburgh, Pa.
WILLIS GALE...Commonwealth Edison Co., Chicago, Ill.
E. L. LINDSETH..The Cleveland Electric Illuminating Co., Cleveland, Ohio
H. P. LIVERSIDGE.....Philadelphia Electric Co., Philadelphia, Pa.
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GEORGE L. MACGREGOR.....Texas Utilities Co., Dallas, Texas
I. L. MOORE.....New England Electric System, Boston, Mass.
W. C. MULLENDORE....Southern California Edison Co., Los Angeles, Calif.
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FRANK M. TAIT.....The Dayton Power and Light Co., Dayton, Ohio
E. S. THOMPSON....The West Penn Electric Co. (Inc.), New York, N. Y.
J. R. WHITING....Consumers Power Co., Jackson, Mich.

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Accounting Division Executive, O. K. BOYD.....Consolidated Gas Electric Light and Power Co. of Baltimore, Baltimore, Md.
Coordinator of Customer Activities, F. J. PORTER, JR. .....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Customer Accounting, S. A. COLE.....New York State Electric & Gas Corp., Ithaca, N. Y.
Customer Collections, A. H. MAYER.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Customer Relations, T. J. PETERSON.....The Detroit Edison Co., Detroit, Mich.
Coordinator of General Activities, W. T. HAMILTON.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Depreciation Accounting, C. N. RICE, JR. .....Northern States Power Co., Minneapolis, Minn.
General Accounting, C. T. DWIGHT.....The Hartford Electric Light Co., Hartford, Conn.
Internal Auditing, G. G. BECHER.....The Dayton Power and Light Co., Dayton, Ohio
Plant Accounting and Records, F. W. ROSS.....Pennsylvania Power & Light Co., Allentown, Pa.
Taxation Accounting, C. A. PALMGREN, JR. .....New Orleans Public Service Inc., New Orleans, La.

COMMERCIAL

Commercial Division Executive, O. R. DOERR.....Pacific Gas and Electric Co., San Francisco, Calif.
Commercial Sales Group, R. W. BUTTS.....Ohio Edison Co., Akron, Ohio
Farm Group, BUD S. MOSS.....Georgia Power Co., Atlanta, Ga.
Industrial Power and Heating Group, G. S. YOUNG.....Kansas City Power & Light Co., Kansas City, Mo.
Residential Group, H. H. BRENAN.....Pennsylvania Power & Light Co., Allentown, Pa.
Special Service Group, F. C. PESVEYC.....Public Service Electric and Gas Co., Newark, N. J.

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Electrical Equipment, C. L. DERRICK.....The Hartford Electric Co., Hartford, Conn.
Hydraulic Power, P. M. HESS.....Pennsylvania Water & Power Co., Lancaster, Pa.
Meter and Service, C. V. MOREY.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Prime Movers, W. L. CHADWICK.....Southern California Edison Co., Los Angeles, Calif.
Transmission and Distribution, J. W. ANDERSON.....Philadelphia Electric Co., Philadelphia, Pa.

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Area Development, W. I. DOLBEARE.....Virginia Electric and Power Co., Richmond, Va.
Atomic Power, EDGAR H. DIXON.....Middle South Utilities, Inc., New York, N. Y.
Codes and Standards, E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
Electric Power Survey, ARTHUR S. GRISWOLD.....The Detroit Edison Co., Detroit, Mich.
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Industrial Relations, F. R. RAUCH.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Insurance, WALTER O. RANDLETT.....Virginia Electric and Power Co., Richmond, Va.
Legal, D. BRUCE MANSFIELD.....Ohio Edison Co., Akron, Ohio
Membership, E. S. THOMPSON.....The West Penn Electric Co. (Inc.), New York, N. Y.
Prize Awards, HARRY RESTOFSKI.....West Penn Power Co., Pittsburgh, Pa.
Purchasing and Stores, J. D. HOGG.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Rate Research, C. A. WILLIAMS.....The United Illuminating Co., New Haven, Conn.
Regulation, HARLLEE BRANCH, JR. .....Georgia Power Co., Atlanta, Ga.
Research Advisory, R. E. MOODY.....Union Electric Co. of Missouri, St. Louis, Mo.
Research Projects, C. W. FRANKLIN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Statistical, ROY F. CRIM.....West Penn Power Co., Pittsburgh, Pa.
Tax Policy, R. P. BRIGGS.....Consumers Power Co., Jackson, Mich.
Technical Exchange for Overseas Visitors, HARVEY E. BUMGARDNER.....The Detroit Edison Co., Detroit, Mich.
Transportation, RANDOLPH WHITFIELD .....Georgia Power Co., Atlanta, Ga.

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